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Theme 1 Systems

Unit 1 interaction of organism

Concept 1.1

Lesson1 Plant need

sunlight,

Water

soil

Plant structure

Flower
Leaf
Fruit
Stem
Root

root

steam

leaves

flower or fruit

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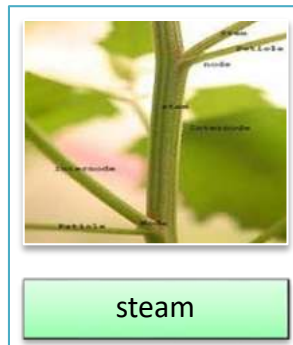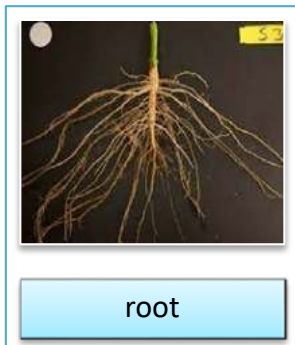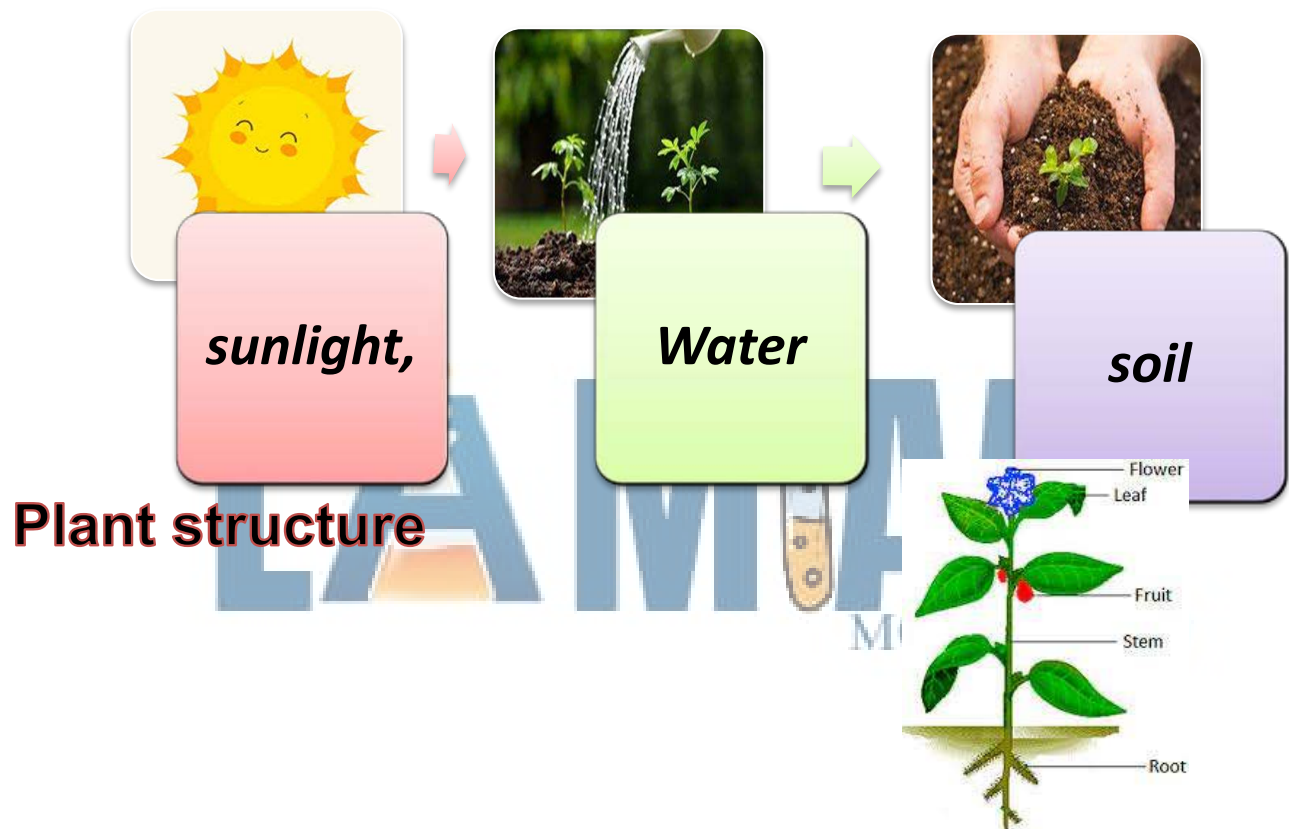
Activity 2

Tree Needs

The needs of plants and animals for growth

*Human need

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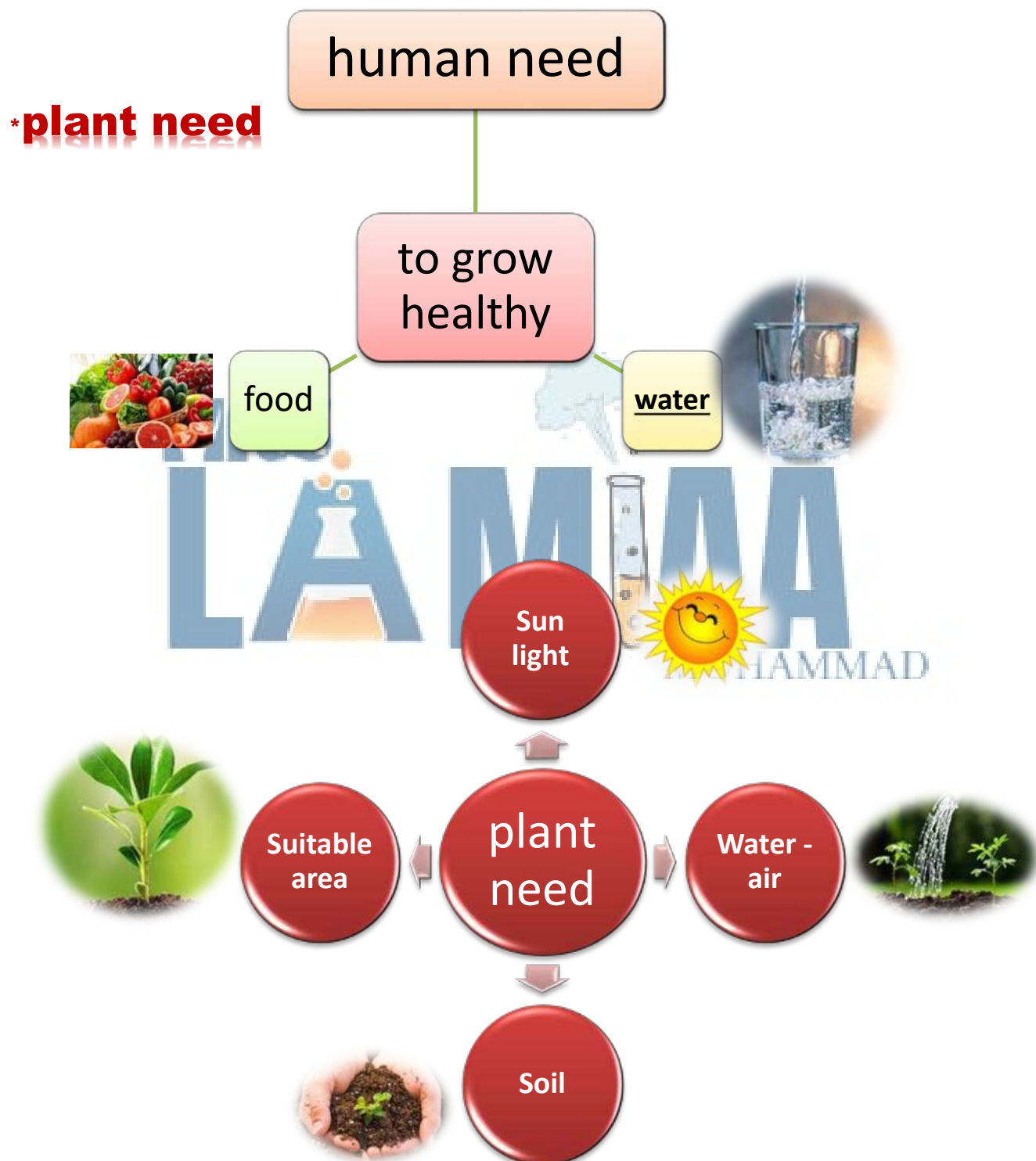
activity 3 what you already know about plant need ?

Plant

To survive Plant need :

1- Nutrient 2- Water

3- Sunlight 4- Carbon dioxide gas

- How they get

- It depends on itself to get food. By photosynthesis process
- -It needs carbon dioxide

Animals

To survive animals need :

- 1- Food 2- Water 3- Oxygen gas 4- Shelter

- How they get

- They gets his food from plant , animal- He doesn't need carbon dioxide. Most animals move to search for food

Plants and food: *Plants make their own food which is a type of sugar that provides the plant with energy to grow..*

Plants make their food (sugar) in their leaves by means of **photosynthesis**

The roots *of a plant absorb water and nutrients from the soil.*

Water and nutrients *are carried from the roots to the leaves through the stem*

photosynthesis

Sun light +carbon dioxide +water and nutrient ⇒ oxygen +sugar

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Lesson 2

Activity 4 do plant needs soil?

1. The seeds can grow without soil if they have water and Sun.
2. Plants can grow without soil for a while, but finally they need soil.

Notes
1. Plants can grow in a hydroponic system instead of soil.
2. Hydroponic system means a place full of water that contains the important minerals for the plant to grow.

***some plants don't need soil to grow , such as**

Plants that grow in water only

Plants that grow in air

Plants that grow on other plants

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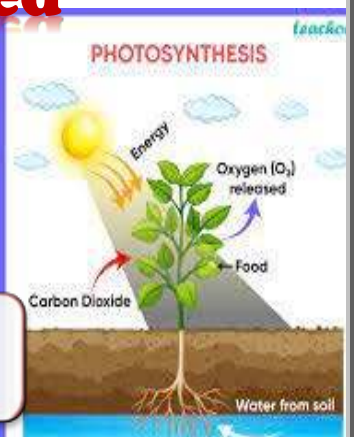
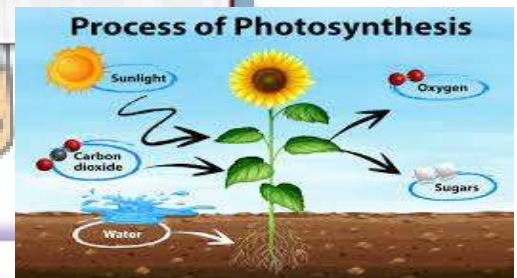
activity 5 sunlight : basic need

Photosynthesis process

it is the process through which plants use the energy in own food

1. *. Green plants use their leaves to collect sunlight and carbon dioxide.- from air*
2. *Inside the green plant sunlight allows carbon dioxide to combine with water to make sugar, which gives the plant the energy needs to grow*
3. *Light is a basic need for the plants, like water, air and nutrients*
4. *oxygen : realesd in the airto help living organisms breath*
   sugar : food of plants which give plant the energy it need to grow

So Photosynthesis process

Sun light +carbon dioxide +water and nutrient *oxygen +sugar*

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Lesson 3

Activity 6 parts of plant

1-Roots

Functions of the plant roots

1-Plant roots have hair-like features called rood hairs that increase the amount of absorbed water and nutrients that the plant needs

2- Roots fix (anchor) the plant in the soil

3-Roots absorb (draw) water and nutrients from the soil, which are needed to make food of plants

Functions of the plant stem

1-Stem transports water and nutrients to the rest of the plant through the xylem

2-Stem supports leaves and Bowers of the plant

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There are many forms of stems:

Form of stems

wood stem
As trunk and shrubs

upright stem
as Most flowers

climb stem
as grapes (vines)

tuber
as extend under ground (potato plant)

runner
Run along the ground
Sugar caner

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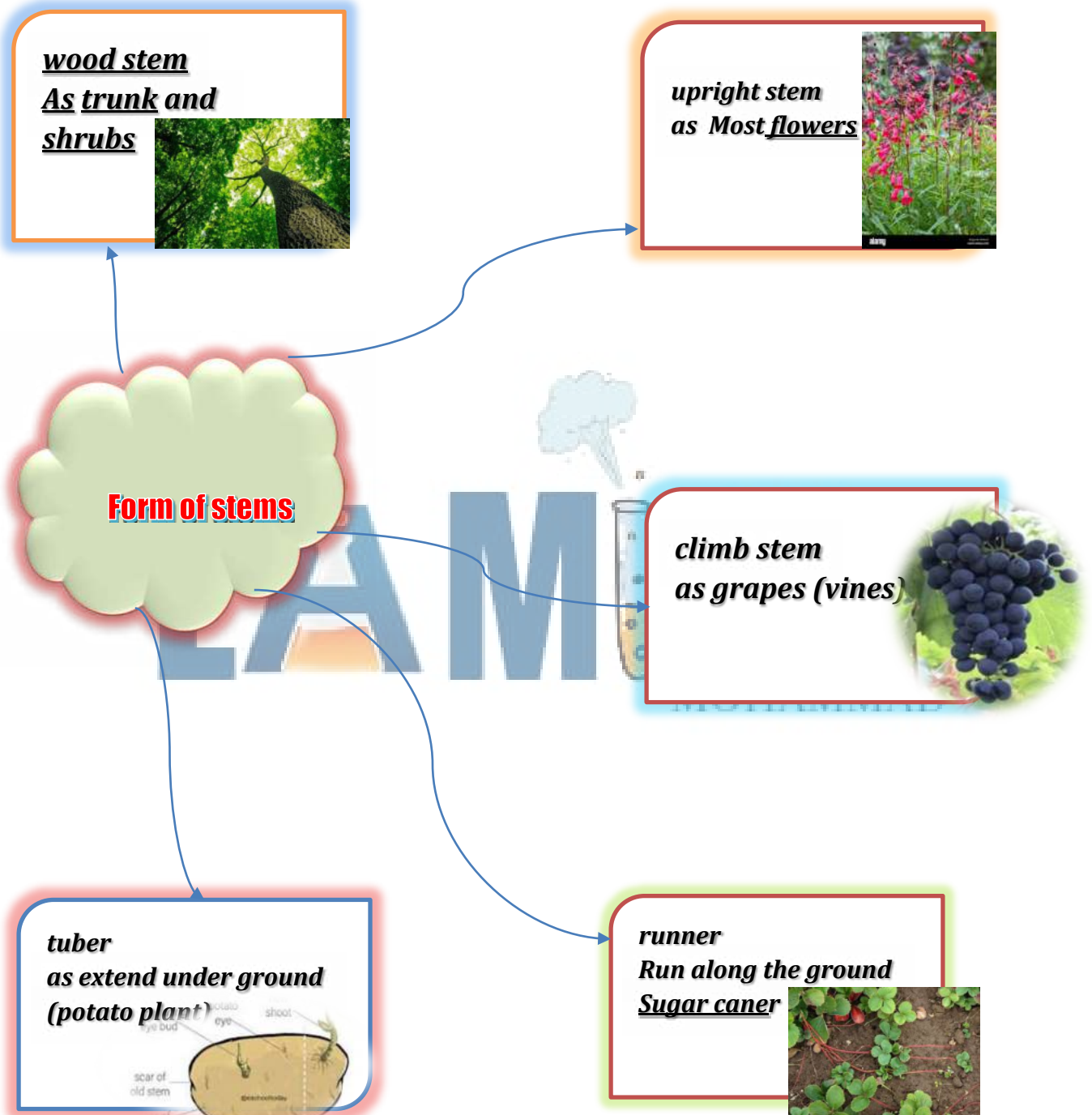

Leaves

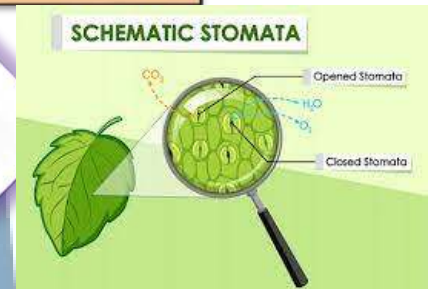
Functions of the plant Leaves

- *Leaves make food for the plant through photosynthesis process*
- *Leaves need water, carbon dioxide gas and sunlight to make food*
- *Leaves contain chlorophyll, which gives them their green color. Chlorophyll captures energy from the sunlight*
- *the air that plant need moves into the leaves through tiny openings called stomata*

Stomata *They are pores on the surface of plant's leaves that allow gases to move into and out of the plant*

SCHEMATIC STOMATA

Opened Stomata

Closed Stomata

types of leaves

1- Some are narrow and look like needles (as pine tree)

2- flat and wider leaves

Note

Xylem carry water from the roots to the stem, then carry to the leaves through smaller xylem tubes

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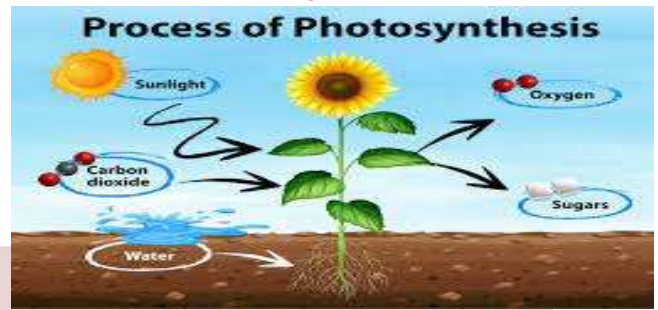
Photosynthesis process

1

- chlorophyll absorb energy from sunlight

2

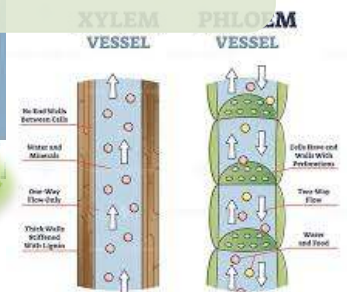
- *green leaves use the light energy from the Sun to combine the carbon dioxide from the air with water*

3

- *to produce*
- *-Nutrients (such as sugars, starches, fats and proteins) that the plant needs to live. Oxygen gas that animals and people need to breathe*

4

- ***Photosynthesis** is a process that takes place **inside the leaves.***
- there are tube called phloem

Phloem *Transport the food materials downward, from the leaves to the other parts of the plant*

Give reason The life on Earth without plants would be impossible

Because during photosynthesis process plants produce oxygen gas that animals and people need to breath

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Water is transported through the xylem in the stem and move to the leaves through the smaller vessels of xylem that connect the stem to the leaves

lesson 4

activity 8 comparing plant and human system

Need for energy

Both plants and humans need energy and gases from the air to survive and grow

Plants

Plants can manufacture their own energy in the form of glucose through photosynthesis process.

Glucose :It is the plant sugar that is produced during photosynthesis and provides energy for the plant to survive and grow

Gases enter plants through stoma in the leaves

Humans

Humans must eat food throughout the day to get energy, as they chew and swallow the food, nutrients are absorbed into the blood.

Air enters the human body through the nose and mouth then travels to the lungs,

where oxygen is absorbed transfer to blood into circulating blood.

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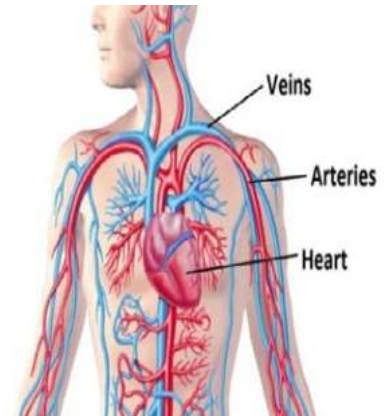
Human circulatory system

system *transport nutrients and oxygen through the blood to the body cells.*

human circulatory system consists of

heart

blood vessels

heart

-consists of 4 chamber two atria and Two ventricles

-pump blood to all body parts

-it receive blood again from all body parts

Arteries

carry blood that is rich with oxygen and nutrients (glucose) from the heart to the body cells

so that the body can grow

Veins

return the blood that carries carbon dioxide and is low in nutrients and oxygen back to the heart, then to the lungs where the blood carries oxygen again

blood capillaries

They tiny blood vessel that connect arteries to veins

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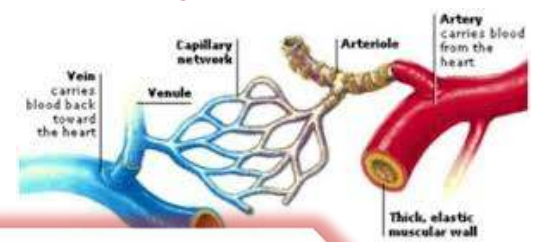
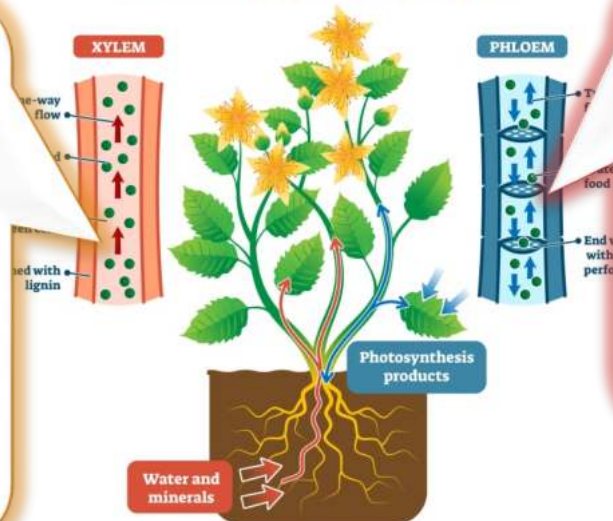

Blood moves in only one direction in a human's arteries or veins

Transport system of plants:

Xylem
transported Water and nutrients to the leaves to make the plant food When the water arrive to the leaves, they begin to produce glucose sugar.

Phloem
carries the glucose sugar downward into all other parts of the plant to grow.

Like the human body, a plant needs energy to grow
In plants; water, nutrients and the plant food formed during photosynthesis are all move through a system of tubes or vessels called the transport system..
Similar to the way arteries and veins pump blood in a specific direction to and from the heart,
The transport system in plants have one-way vessels that move important substances between the parts of the plant.

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Comparing the human body to plants

P.O.C	Plant Transport	Transport System
Similarities	They transport nutrients and gases to all body parts . They transport nutrients and gases in one direction only	
Differences	It consists of 1-Xylem 2- Phloem	It consists of 1- Arteries 2- Veins
	Xylem transported Water and nutrients to the leaves to make the plant food Phloem carries the glucose sugar downward into all other parts of the plant to grow	Arteries carry blood that is rich with oxygen and nutrients (glucose) from the heart to the body cells Veins return the blood that carries carbon dioxide and is low in nutrients and oxygen back to the heart

Activity 9 Plant food

1. • *Plants have <u>some structures</u> that take in water and nutrients from the soil and move them to other parts of the plant*
2. • *Plants also have <u>other structures</u> that absorb sunlight and take in carbon dioxide from air.*
3. • *<u>In plant's leaves</u>, sunlight helps water combine with carbon dioxide to make glucose sugar which is used by plant cells for food.*
4. • *<u>Sunlight provides</u> the energy needed for this food-making process.*
5. • *During photosynthesis process, light energy of the Sun is transformed into chemical energy that is found in glucose.*
6. • *<u>Glucose for energy</u>*
   • *<u>Phloem</u> moves glucose from the leaves to the other parts of the plants*
7. • *<u>Plant cells</u> use glucose as a source of energy to live and grow.*
8. • *<u>During photosynthesis process</u>, the plant also produces oxygen and water which are released into the air.*
9. • *<u>Other living organisms</u>, such as animals and humans, depend on the oxygen that plants release during photosynthesis process for their respiration.*

activity 10 Flowers and Seeds

plant use the food they make to produce the flower which responsible for reproduction

•Some plants have large colorful flowers

•Some other plants, such as grasses, have very small flowers and some flowers are not very colorful

Plant reproduction *It is the process of making new plants*

Function of the plant's flowers:

Flowers produce seeds for the plant that help the plant to reproduce. When seeds receive air, water and the correct temperature, they can grow into a new plant.

In the sunflower, *the seeds are the small dark-colored objects in the center of this flower*

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Lesson 5

Activity 11 Seed dispersal

Ways of seed dispersal in nature

1-Water ***hollow from the inside can float on water***
ex :Coconut Seed

2- Winds ***seed despersal by wind are light***
ex : Maple Seed

3-seed are eaten by animals ,some seed can dispersal when theycome out withanimalsstool in anther place ex :tomato seed ,apple seed

animals or human transport,seed dispersalby stick to animal furorhuman clothes
ex: burr seed (have spins)

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How do plant parts make use of water , air , and light for vital processes ?

My Claim :

- A plant depends on its parts to obtain basic needs , such as water , air , and sunlight .
- Each part of the plant has a function to help it survive .

Evidence

-**Plant's roots** absorb water and nutrients from the soil .

-**Plant's stems** transport the water from the roots to the leaves .

-**Plant's leaves** absorb air and sunlight to produce their own food from glucose .

-**Sunlight** is one of the basic needs of plants .

Scientific Explanation with Reasoning

- The light energy emitted by sunlight converted into chemical energy.

-If the basic needs of the plant are not met, it will not grow and may die .

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Concept 1.2

Energy flow in ecosystem

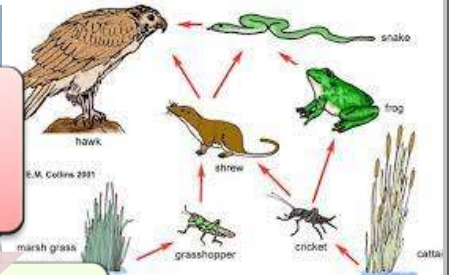
Lesson 1 ecosystem

Ecosystem. A natural area consisting of living organisms and non - living things that interact with each other

Activity 2 How does energy flow through an ecosystem?

Energy flow (moves) through an ecosystem from plants to animals and between animals when they eat each other, then when living organisms die, their energy is returned to the soil

Hawks in ecosystem

Hawks get energy from food

Hawks generally *eat different types of animals such as, snakes, mice, fish, birds, squirrels, rabbits and other small ground animals*

Hawks do not eat plants, but they eat animals who eat plants, so they also depend on plants for energy

There are few predators that can attack hawks such as eagles or other hawks

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What happens when the hawk dies

When a hawk dies, it decomposes and its energy is returned to the soil

Activity 3 what do you already about energy flow in ecosystem

An ecosystem is a community that provides food, water and shelter to all living organisms live in it
There are many different ecosystems on the Earth such as ocean, a rainforest a desert or the tundra

- **Animals don't choose the food they eat according to its taste,**

but they eat food according to what these animals bodies need to survive such as
Caracal eats mouse - Rabbit eats grass Bird eats butterflies and worms

Caracal eats mouse

Rabbit eats grass

Bird eats butterflies and worms

Why animals eat plants or other animals

Because animals need energy that comes from eating plants and other animals, as they cannot produce their own food

Lesson 2

Activity 4 food is energy

How do we get energy :

- *Food and oxygen we breath provide us with energy*
- *We need energy to-do all activitiesin our life as (thinking –breathing – and moving)*
- *Our body use some energy even when sleep*

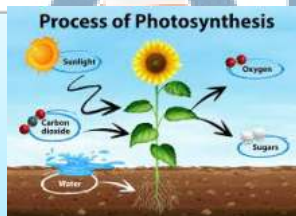
The primary source of energy

The Sun *is the primary source of energy for all organisms on Earth to live, grow and carry out life processes*

How different living organisms get energy

Living organisms can either produce their own food such as plants or get food from other organisms such as animals including humans

Plants

Plants can make their own food *through*

photosynthesis *process by absorbing the sunlight through their leaves and use the sun's energy to convert water and carbon dioxide gas into glucose*

Animals

Animals and humans cannot make their food*, but they get energy from the environment in which they live*

Different animals can get their food by

-Eating plants only Eating other animals that eat plants Eating both plants and animal

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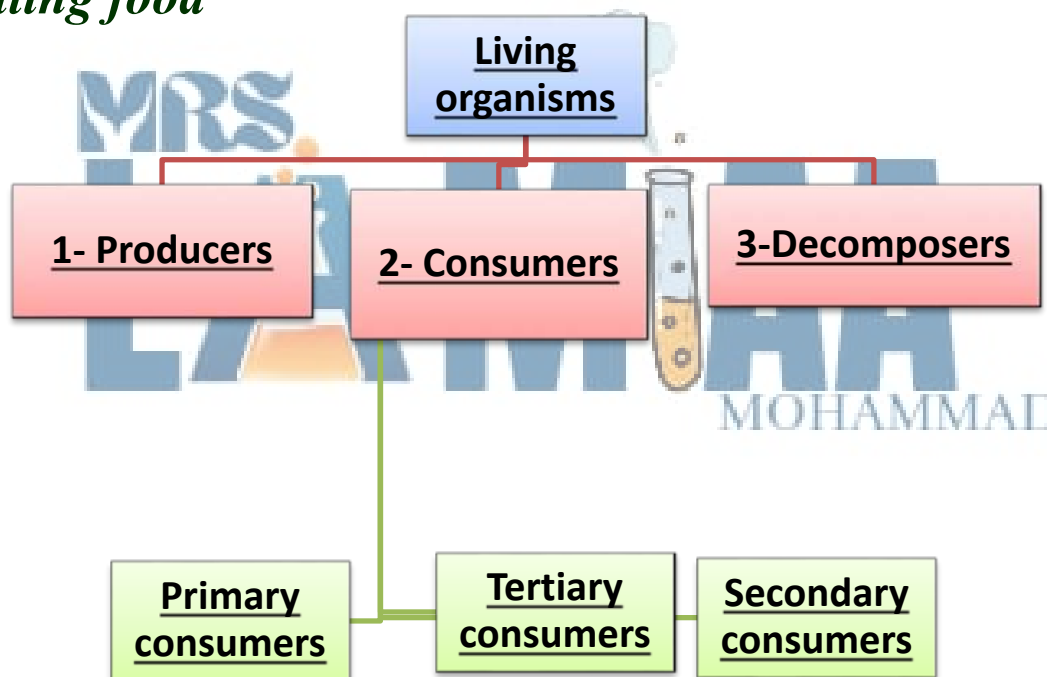
Not

The light energy of the Sun (radiant energy) is converted into chemical energy in plants during photosynthesis and then this energy is passed to animals and humans

Activity 7 food chain

Energy for life

All living organisms eat food to get the energy they need to survive
Living organisms feed on one another, so energy passes between them

- ***Living organisms are classified according to their ways of getting food***

First producer

1. They are organisms that can make their own food and don't consume (feed on) other plants or animal
2. Plants use energy from the Sun to produce their own food by photosynthesis proces
3. all of the producers on the Earth are plants

Second Consumers

1. They cannot produce their own food
2. They are organisms that eat other living organisms to get their energy, because they cannot make their own food

1- Primary consumers

- They are animals that eat producers (plants
- Examples Insects

2-secondary concumer

- They are animals that eat the primary consumers
- Examples Birds

3- Tertiary consumers

- They are animals that eat the secondary consumers
- meat - eating animals
- Examples crocodile

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Third decomposer

1. • *They are living organisms that carry out the decomposition process by decaying dead organisms .*
2. • *The final link in any food chain*
3. • <u>Importance</u> *1-Increasing the soil fertility*
   • *2-Recycling nutrients back into the ecosystem*

Examples Decomposer

Fungi

• **Bacteria**

worms

millipedes

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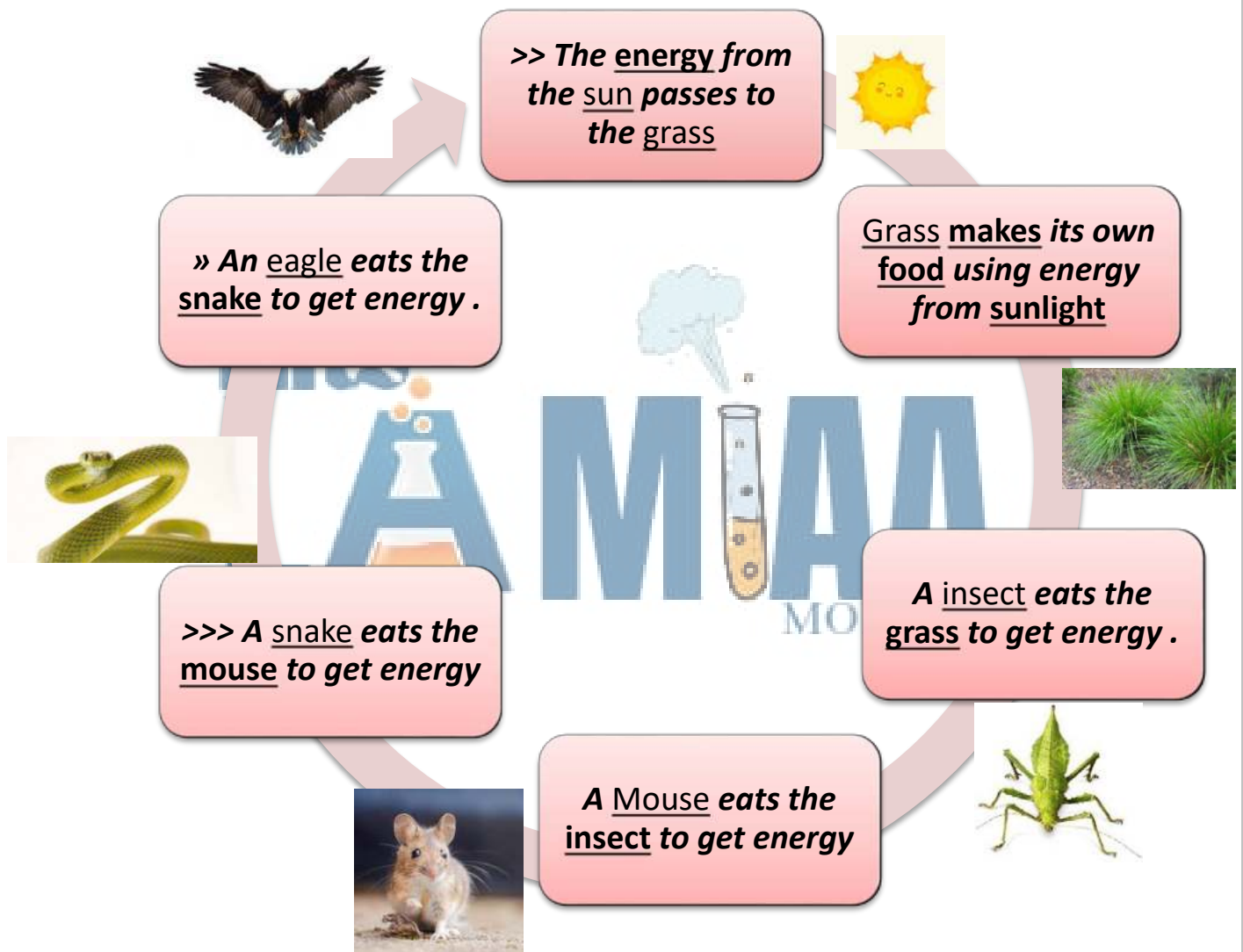
Food Chain : *It is a model that shows the movement of energy between living organisms in a linear feeding relationship .*

>> ***The energy from the sun passes to the grass***

Grass makes its own food using energy from sunlight

A insect eats the grass to get energy .

A Mouse eats the insect to get energy

>>> ***A snake eats the mouse to get energy***

» ***An eagle eats the snake to get energy .***

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Lesson 3

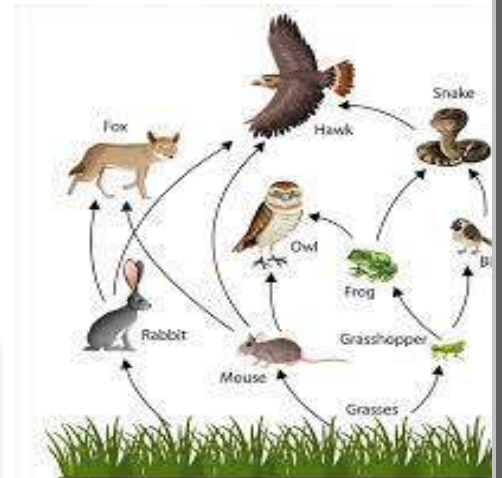
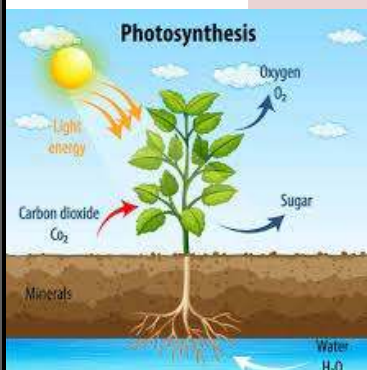
Activity 7 food chains

Some living organisms obtain their needed energy by eating other living organisms?

Because they cannot get energy directly from the Sun.

food web

It is a model that shows many different feeding relationships among living organisms.

A food web is made up of several interconnected food chains, food chains show the relationship of food and energy that passes from one organism to another

the Sun provides energy for producers such as plants to make their own food during photosynthesis process.

, plants provide food for a series of consumers which may eat only plants eat both plants and animals. So, the ways in which many food chains interact within an ecosystem form a food web

Activity 9 Interactions in food webs

Food webs show that different organisms in an ecosystem are connected to allow energy to pass between them to survive

1. -Producers are eaten by some consumers
2. Some consumers are eaten by other consumers.
3. -Some consumers may eat the same producer or prey

Not

It is better to use a food web to show interactions among living organisms than a food chain.

Because a food web shows interactions among many food chains so, the food web contains many organisms,

while a food chain shows interactions between just few organisms

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Activity 11 Seed Dispersal

1-Some plants have seeds that are really sticky.

Their seeds can stick to your clothing or would stick to an animal to be carried to another environment

2- Some plants have seeds that are dispersed by the wind. ***These seeds are released from the plant when the plant is ready. The seeds fly away to new habitats to grow in other places***

Concept 1.3

Change in food webs

Lesson 1

Activity 1 Changes in Food Webs

Ecosystems *and* **food webs** *can be affected by many factors such as: .*

- *Climate changes*
- *Pollution*
- *Human activities*

Pollution: *It is the harms that happen to air, water or soil by substances that can harm .living organisms*

What might happen to a food web when an organism or the environment changes within an ecosystem?

1
- *All organisms may be affected, where*
- *-If plants (producers) were disappeared from an ecosystem, the consumers will need to move to other places to search for food or they will die*

2
- *- If the number of one species of consumers in an ecosystem increases the resources of food and shelter may disappear, so they will die.*

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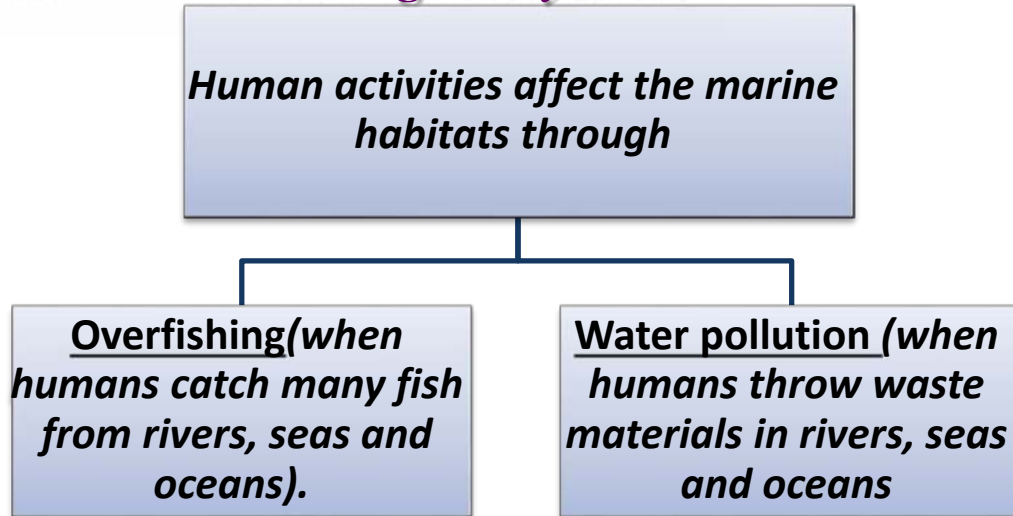
Activity 2 Protecting Ecosystems

Human activities affect the marine habitats through

- Overfishing(*when humans catch many fish from rivers, seas and oceans).*
- Water pollution (*when humans throw waste materials in rivers, seas and oceans*

Protection the marine environment in Palau island

1. On any island, we can observe that what is happening on land affects what is happening in the marine environment
2. People in Palau uses different conservation programs to protect the marine environment and its resources by creating well-designed protected marine environment, where
3. People in Palau control the human activities on land to keep the protected marine environment from pollution by avoid throwing waste materials in ocean

Fishers must not overfishing *the coral reefs to conserve the marine environment*

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Activity 3

Changes in Food Webs

When an ecosystem changes, food webs change too, where
• Relationships between organisms in an ecosystem play an important role in keeping this ecosystem balanced

• When organisms are removed or their role in an ecosystem changes, this ecosystem could be destroyed (collapsed) and also food webs would change.

How does ecosystem change affect food webs

What would happen if	Result	Reason
There is a gentle rain in the desert	The desert ecosystem may be improved	Because rainwater will feed the plants (producers) which will feed the organisms
There is a heavy rain in the desert	The desert ecosystem may be harmed	Because the water of heavy rain will cause flooding which will destroy the ecosystem
There is a drought and all the grass dies	The food web in the ecosystem may be destroyed	Because the plants will die and also the organisms will die
There are many top predators in the food web	The other organisms in the food web may be harmed ا	Because the top predators will eat all the organisms

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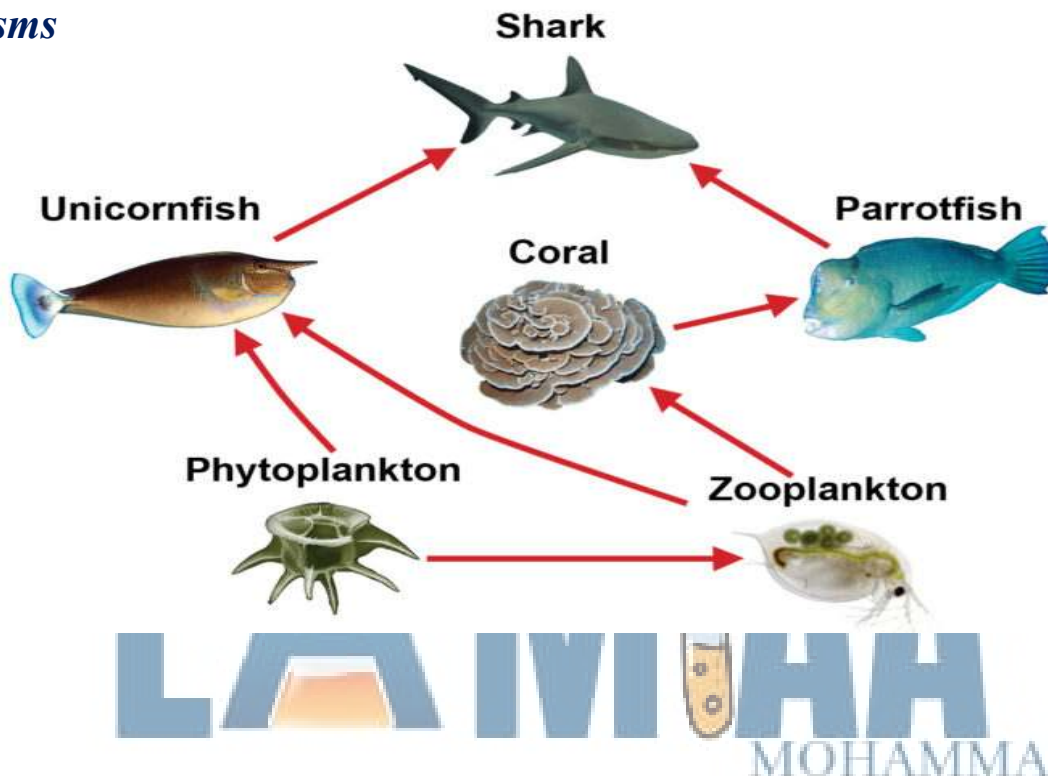
Food webs

The food web is a model shows different feeding relationships among living. organisms

Look at this marine food web, then observe which organism s eat other organisms

Algae produce their own food

The zooplankton, clam and sea urchin feed on the algae

The sea star feed on the clamCoral feeds on the zooplankton

Butterfly fish and triggerfish feed on coralParrotfish feeds on coral and sea urchin

The shark feeds on the sea star and the three different fish

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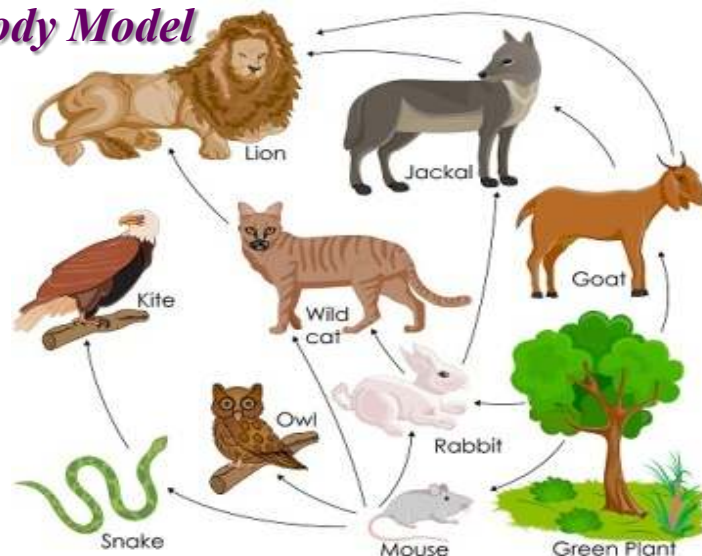
Lesson 2

Activity 4 Energy Flow Body Model

The Sun ***produces energy***

the plants take,

this energy transfers ***to consumers***

when concumer die, the decomposers convert them into simple substance

return the energy back to the soil.

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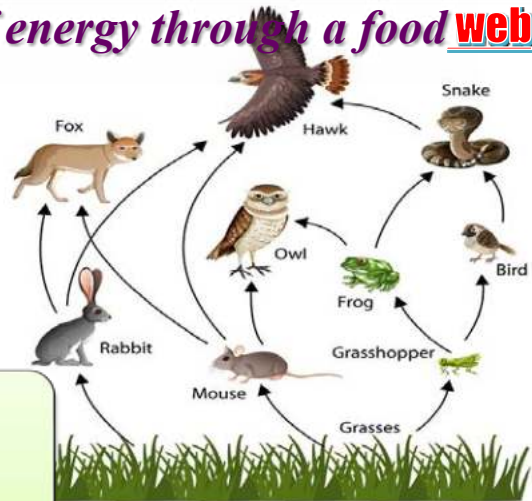
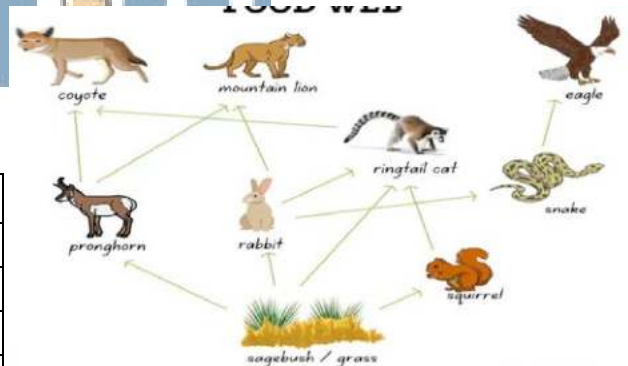
to make a model that shows the flow of energy through a food web.

When a predator feeds on a prey, it gains energy, so the energy transfers from the prey to the predator.

The energy in the overall system remains as the same, wher

-10% only of this energy transfers between living organisms when an organism 1 feeds on the other
-90 % of this energy is left to the decomposers which return this energy back to the soil

Activity 5 Desert Food Web

Number of arrow	Direction of arrows
(2 blue arrows)	Comes out of grass
(1 green arrow)	Goes to the snake
(3 red arrows)	Goes to the fox
(3 black arrows)	Goes to the eagle

What would happen

To the rabbits (hares) if all the grass were removed from the previous food web

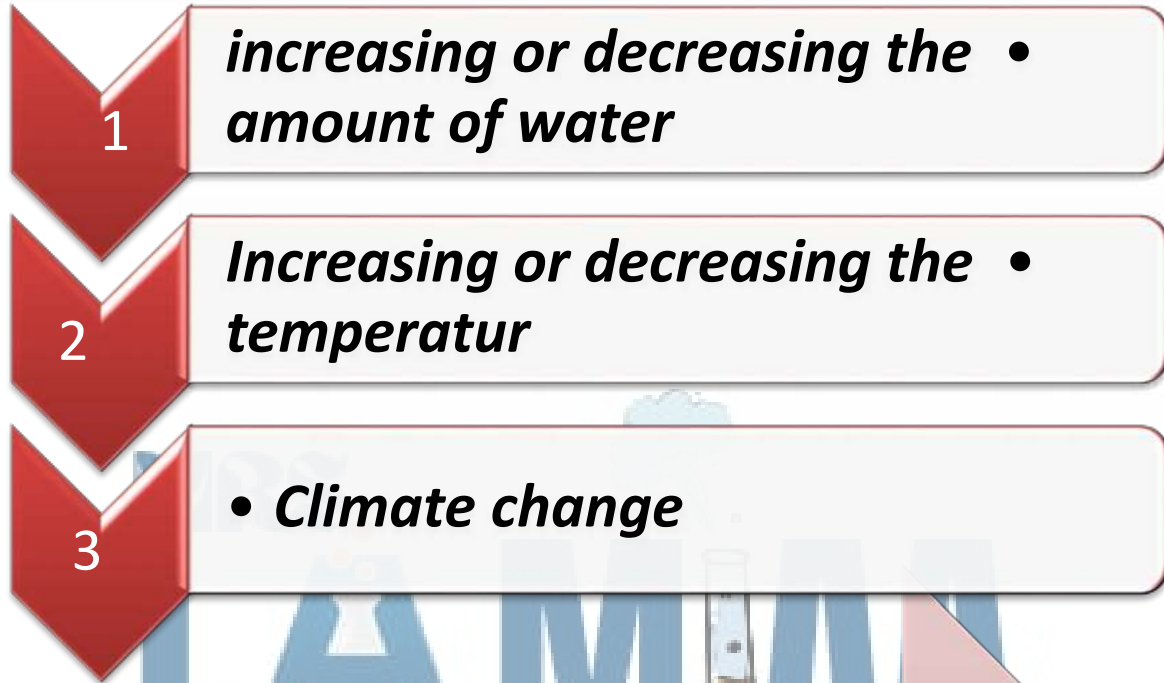
Rabbits would not find any type of food, therefore they would die.

To the eagles if all the grass were removed from the previous food web. At first, the *eagles would not be affected but when the rabbits die, the eagles would have less food*

Activity 6 Population Change

Population

It is the number of organisms of one type of species living in an area

1. *increasing or decreasing the amount of water*
2. *Increasing or decreasing the temperatur*
3. *Climate change*

-If the climate change is unsuitable → *organisms would either die or move to another place*

If the climate change is suitable → *the population of a species increases*

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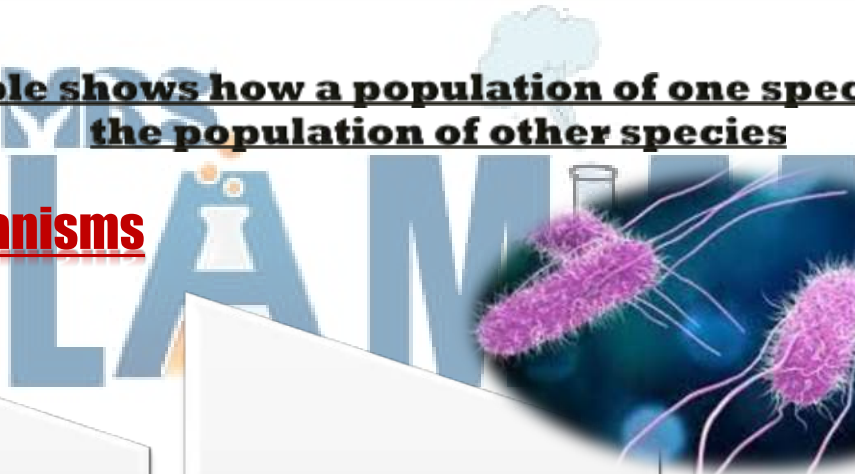
In an ecosystem

1. all species depend on other species for survival
2. so an increase or decrease in one species affect the population of other species causing a population chang

an example shows how a population of one species affects the population of other species

1-Microorganisms

They are organisms that are too small for people to see with only their eyes

- They can make their own food, so they are the producers in the marine food

They are found in cold water habitats?Because they need this water to survive

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Seabirds

They build their nests on the top of mountain cliffs

They dive deep down into the sea to feed on small fish which are the main source of food for many seabirds

The small fish feed on microorganisms that float on the surface of the sea

What will happen to mi corganisms if the climate is changed and the water become warm?

1. Microorganisms will move toward an area where the water is cooler •
2. Small fish that feed on these microorganisms will also move to a new habitat •
3. Seabirds will not have a food source, •
   - Some of them will move to a new habitat, some will die

Lesson 3

Activity 9 *Habitat loss*

Why are healthy habitats important to all organisms in a food web

Because they provide organisms with resources that they need to survive as air, food, water and shelter, so if each species gets its needs to survive, there will always be enough food for each organism in the food web

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When these habitats are destroyed,

different organisms may not be able to survive and this will negatively affect the flow of energy in the food web

Building up more buildings and roads

1. From human activities that change the habitats in an ecosystem are: -

Overfishing in seas and oceans -

-Throwing waste materials in water

2.Human activities can also impact the weather and nonliving factors in an ecosystem, such as the temperature of ocean water

3.All of these changes can cause habitat loss which is one of the main causes of extinction

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Example of habitat loss in a coral reef system

Coral reefs

They are some of the most diverse and valuable ecosystems on Earth

They provide food and shelter for large numbers of fish and other marine organisms

They are important for tourism, where people travel to coral reefs for fishing or diving

This help *increase the visitors and income of local hotels, restaurants and other business*Coral bleaching

1. Coral reefs bleaching happens when the water temperature rises,
2. When the water is very warm, coral reefs will get rid of the algae living in their tissues
3. This causes the coral reefs turn completely into whit
4. As a result of coral reefs bleaching, they often do not survive

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Impact of coral bleaching

Destroying of coral reefs due to coral bleaching as a result of rising of water temperature has negative effects on many communities as

Coral and fish communities

Fish and other marine organisms that depend on coral reefs for food and shelter may die or move to another habitat

Human communities

People that depend on coral reefs and fish for food will be negatively affected

Plastic Pollution

large number of living organisms, don't find anything to feed on except plastic waste thrown in seas

When the amount of plastic increases in the sea, *the number of marine organism decreases, so marine food webs will be affected, leading to a breakdown in the flow of energy*

The effect of plastic products on marine life

whales, sea turtles, seabirds *and* fish *cannot often differentiate between real food and plastic*

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1-How do sea turtles get harmed by feeding on plastic

Sea turtles cannot differentiate between a jellyfish and a piece of plastic in the water.

Sea turtles *eat a lot of plastic thinking that it is jellyfish, so they get harmed*

2-How do coral reefs get harmed by feeding on plastic

Due to the effect of UV rays coming from sunlight, plastic products get broken down into smaller pieces called microplastics (smaller than a grain of rice

When coral reefs filter the seawater to get their food, they ingest these microplastics that are as small as the pieces of food that coral reefs get from the water, so coral ***reefs get harmed***

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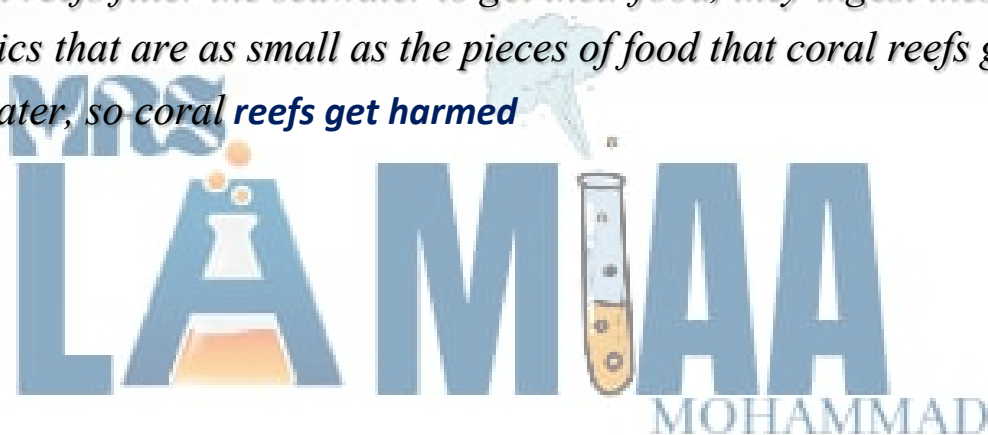
Lesson 4

Activity 10

There are ways through which we can restore the habitat leading to a healthy and balanced ecosystem

Restoration projects *allow scientists to find out better solutions for reducing the negative impacts of human activities*

Human activities

can cause big changes to the environment such as:

When many plants are removed, riverbanks erode, so floods may reach farther areas when wetlands are drained

Once harm occurs to the environment, scientists, engineers and citizens work "Habitat restoration"

Habitat restoration

It is the process of returning a habitat (an environment) back to its natural state before harm was done

Habitat restoration projects try to repair all parts of the habitat, where they help prevent species from extinction by restoring the habitat (including the resources of food, water and shelter) to the way it was before its damage
Note Most of habitat restoration projects require a lot of work and take a long time, but they can have very positive results

Rebuilding coral reefs *One example of restoring a habitat is "a coral reef rehabilitation project" that happens in the Arabian Gulf, where Scientists collect small parts of different coral species and then move them to a "nursery".*

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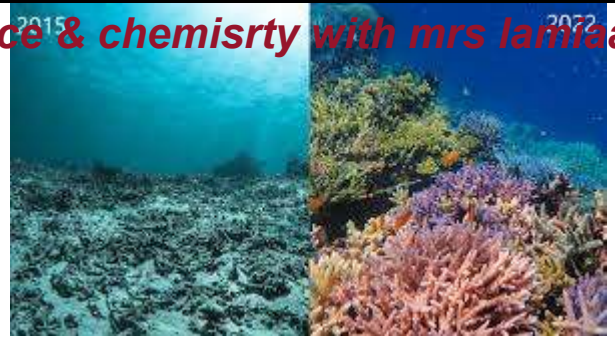
Nursery *is an area in the sea, where scientists take care of small pieces of coral until they grow up and can be moved back to the reefs where they were dying*

- ***The healthy coral reefs can continue growing and reproducing to make new coral reefs again***

Protecting coral reefs from plastic pollution

The world-famous coral reefs of the Red Sea are home to many .marine organisms

In Egypt, ***coastal communities near the coral reefs applied a new way of life known as a "zero plastics", where people in these communities Replace plastic forks with wooden ones - Replace plastic bags with cloth - ones***

What happens if A habitat is not restored

Many species in this habitat may be lost, because they don't have their needs to Survive

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Unit 2 Concept 2.1

Matter in world around us

Lesson 1 Types of matter.

Activity 1 **Matter**

***Matter**: It is anything that has a mass and volume*

Everything around us is made up of matter.

Note Any matter takes up space means that s matter has a volume

- *All things in the world are made up of matter*
- *so it is very import to know the properties of matter*
- *•Any matter is made up of tiny particles that we cannot see with our eyes*

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Activity 2 ***states of matter***

1- Solid state. *Such as ice*

2- Liquid state, *such as water*

3- Gaseous state, *such as air or water vapor*

Not

• **Most matter** *in* **three** *main states*

• **matter** *can change from one state to another*

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Lesson 2

Activity 3 *observing Matter*

Matter is something we can

Feel
Such as Air

See
Such as Ball

Smell
Such as flower

Matter

-Solids, liquids and gases are made up of very tiny things called particles. Particles of all matter are in continuous motion.

First solid

first solid

- *Have a definite shape*
- *Have a definite volume*
- *The particles very close to each other (packed tightly*
- *They have less energy*
- *They move only a little bit*

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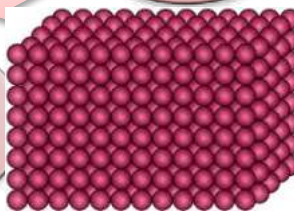
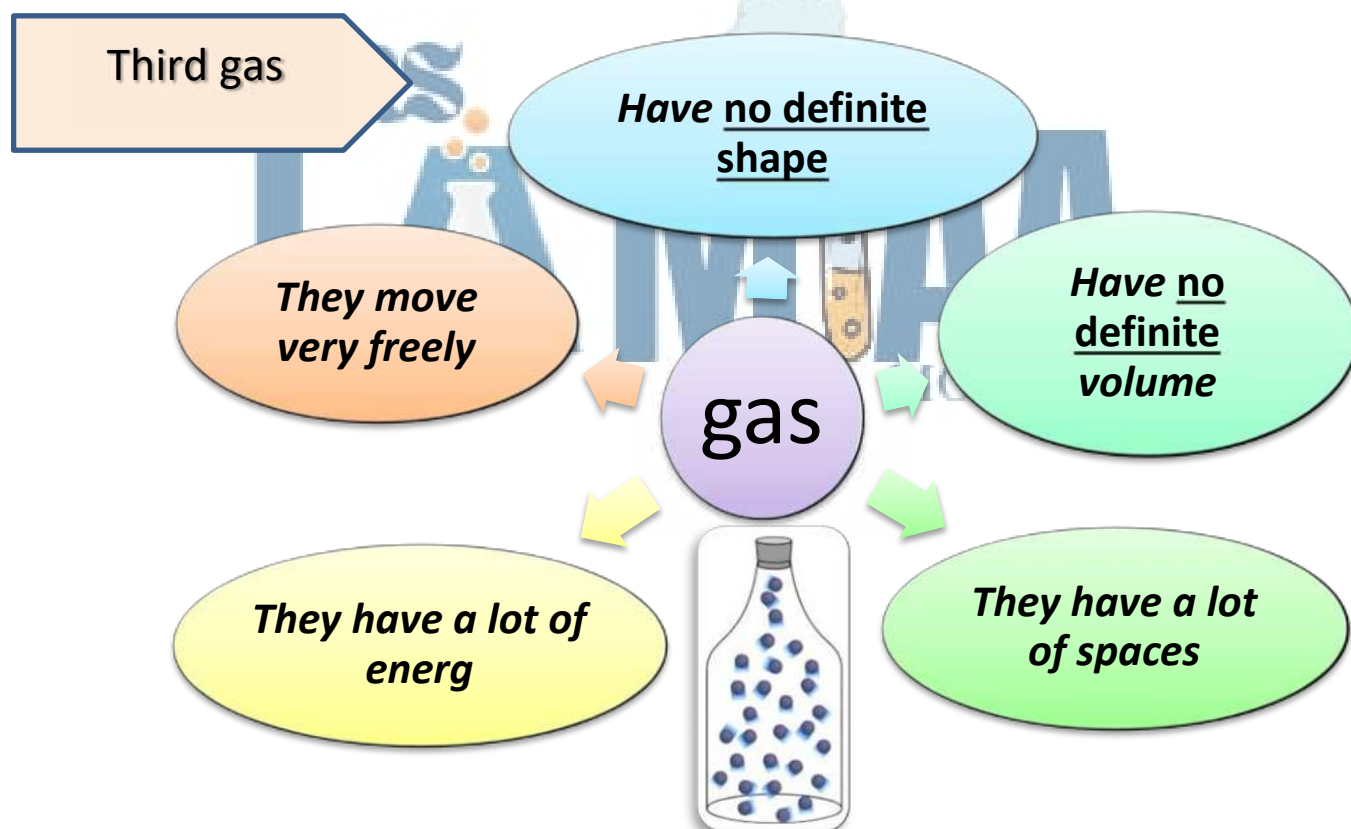
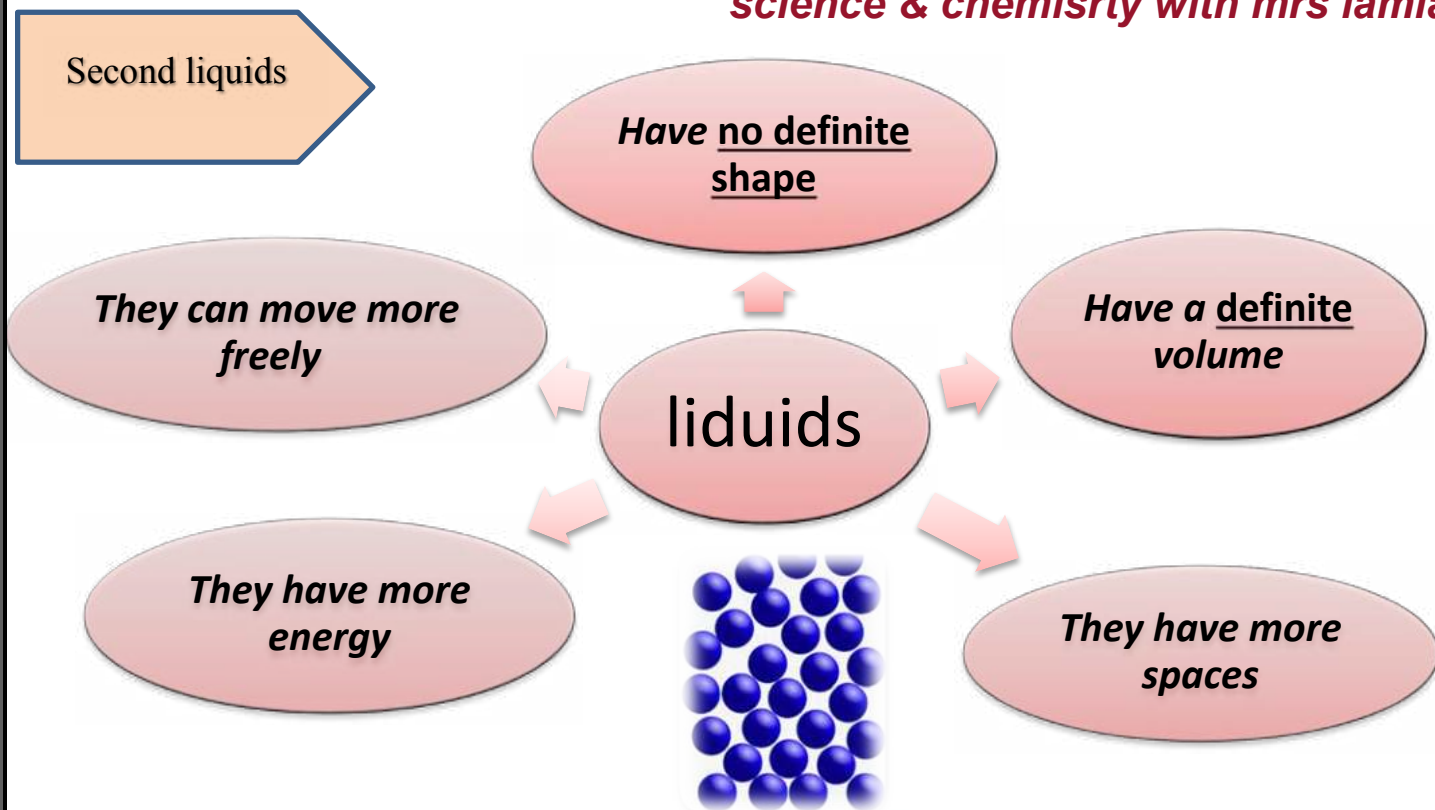

Measuring and observing matter •

- Ruler measuring tape (tape measure)	Scale
To measure the length of some matter	to measure the mass of matter

Notes

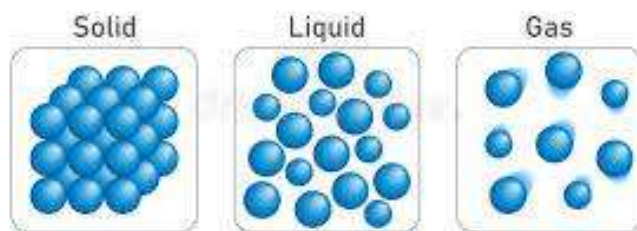
1. Matter can change from one state to another state such as:

2. There are some things that are not matter such as light and sound which are forms of energy

Solid

Solid ice — ***Melting*** → liquid water

Solid ice ← ***freezing*** — liquid water

States of matter

States of Matter

.State of matter is a certain form that matter can take which may be sold, liquid or gas

The shape of solid matter

- *They have a definite (fixed) shape.*
- *Their shape don't change unless something is happening to change them.*

The shape of liquid matter

- *They don't have definite shape.*
- *They take the shape of their containers.*

The shape of gases matter

- *They don't have definite shape.*
- *They completely fill their containers and take their shapes*

Notes

1. Matter in any state (solid-liquid-gas) takes up space.

2. If there are two objects, they cannot take up the same space at the same time

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Lesson 3

Activity 5 Particles of Matter

Any matter made up of tiny particles that we cannot see with our eyes,

Particles *are known as* "**the building units of matter**"

Regular microscopes help us see some particles of matter.

There are many different types of particles, where different kinds of matter are made of different kinds of particles such as:

-Particles of gold are different from particles of iron

-Particles of water are different from particles of milk.

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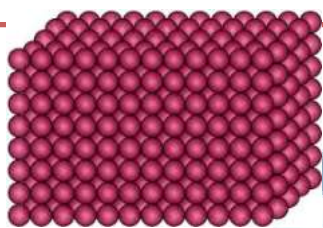
Particles of solids

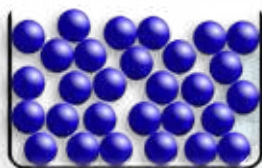
They are packed closely togetherso,

- They vibrate or move around their place.

-They can't move from one place to another and can't slide over each other

Particles of liquids

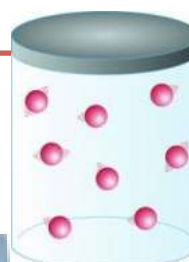
They are held together more loosely, than particles of solids, so:

-They move faster than solid particles.

- They can slide over each other so, they take the shape of their containers

Particles of gases

They are not held together, so

They move very quickly in all directions.

They can spread out to fill up any container they put in.

Activity 6 Modeling the Particles of Matter

When a cup of ice cubes exposed to the Sun in a hot summer day:

The Sun will heat up the particles of ice cubes.

The particles of ice cubes move faster and turned into liquid water

The Sun heats up the particles of water so, they move faster and the water will evaporate

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Activity 7 Tiny Particle Size

The size of particles depends on

1. The type of particles 2. How particles connect with each other.

The average size of a particle is so tiny that one of your hairs is about 150,000 to 300,000 particles

To see the particles of one blood cell, scientist cannot use the regular microscope, but they use a special microscope (electron microscope)

► *How can we show that particles exist?*

When you blow up a balloon	When you squeeze a balloon
The particles of air inside the balloon move very quickly The particles of air hit and bounce the balloon from inside so	*The particles come close together so the balloon becomes smaller.*
they produce a force that inflates the balloon and gives it a round shape.	*If you squeeze more on the balloon, will pop and the particles of air inside the balloon will escape.*

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Lesson 4

Activity 8 Models

Model: It is a copy that is similar to a real thing.

- **Models** *help us understand things we cannot easily see such as:*

We cannot see the Earth which is too big while we are standing on it.

-Models may be drawings, objects or ideas that represent a real event, object or process

- Models look like, move like or work like what they copy.

- *Models can represent very big things in a smaller size, because it is hard to see them*

Example 1: The Earth:

A globe represents a model of the Earth which shows us

1. *-The shape of the Earth*
2. *- See all planets at once*
3. *- Compare between planets which one is biggest and which one is closest to the Earth*

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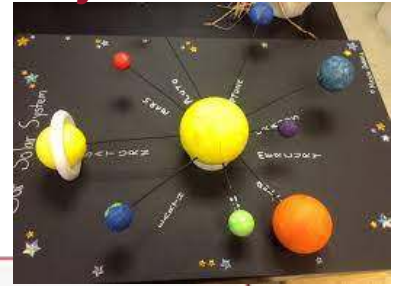
Example 2: The solar system:

A model of the solar system helps us

1. Solar system is a very big place, planets and the Earth are very big objects.
2. See all planets at once
3. - Compare between planets which one is biggest and which one is closest to the Earth

How do models help us look at small things

A model of a germ helps us

1. Germs are very tiny and they are spread and us which make us sick
2. See the shape of a germ without microscope
3. See different parts of germs which help to spread from one person to another

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Models help us understand how things werk

Example1 A model of a volcano

A model of a volcano shows us
The shape of a volcano How the liquid that comes out of a volcano during a real eruption

Example 2 A model of an airplane

A model of an airplane shows us how it flies up into the air.

Not

models help us Teach something about the real things they copy

1. See and understand how things work
2. Learn about many things at just the right size
3. Know what we could not otherwise see

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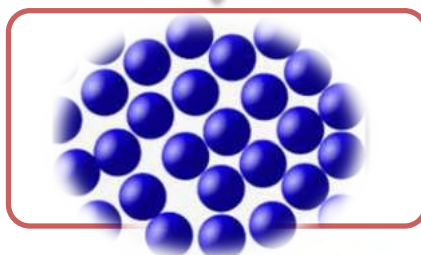
Activity 9 Modeling States In this activity,

*The arrangement of particles in:*ي

- Solid matter	Liquid matter	Gas matter
: They have a regular pattern (organized).	: They have a random arrangement (not well organized	: They have a random arrangement (not organized at all).

Lesson 5 Careers and States of Matter

Activity 11

We use the three states of matter to prepare and cook different types of food such as:

solid matter	liquid matter	gases matter
• -Rice • Pasta • Frozen vegetables	• Water • Oil. • Vinegar	• Natural gas used in gas ovens • Steam of boiling water

Points of comparisons	Particles of solid matter	Particles of liquid matter	Particles of gases matter
Spaces between particles	They are very close together so, solid objects are hard.	They have more spaces but still (held) close together	They have a lot of spaces (are not held together).
Energy of particles	They have more energy.	They have less energy.	They have a lot of energy.
Movement of particles	They vibrate or move around their place	They move faster than solid particles.	They move very freely and quickly in all directions.
Spreading of particles:	They can't move from one place to another & can't slide	They can slide over each other so, they take the shape of their containers.	They can spread out to fill up any container they put in
Arrangement of particles	They are arranged in a regular pattern (organized).	They have a random arrangement (not well organized).	They have a random arrangement (not organized at all).
Shape	They have a definite (fixed) shape.	They don't have definite shape.	They don't have definite shape.

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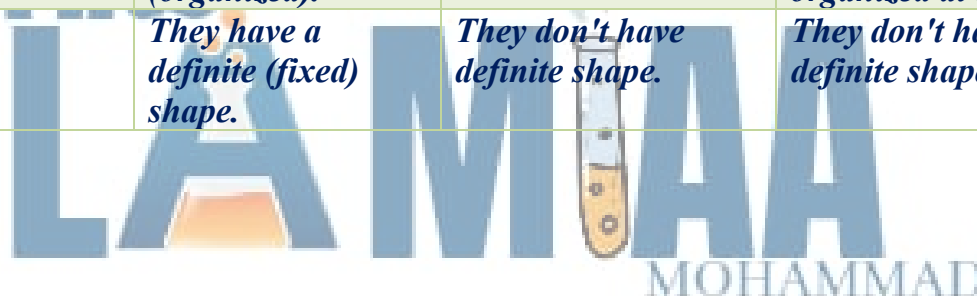
Concept (2.2)

Describing and Measuring Matter

career and states of matter

Activity 2 A Roof for Every Type of Climate

in this activity we will know some kinds of materials which people use to make roofs of homes and buildings

	Desert Home	Cold weather Home	Tropical Rainforest Home
Material of the roof	*Made of strong stones*	*Made of ceramic tiles (ceramic bricks*	*Made of Leaves and sticks.*
Properties of roof material	*It is flat-It protects the home from dust and dirt..*	*It is slanted - (inclined) it protects the home from .rains.*	*It is slanted (incline) It protects the home from animals getting inside*

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Note

The kind of material used to make a roof depends on the climate where the home

Activity 3 : What Do you Already know About Describing and Measuring Matter

Matter can be described by its color, shape odor, texture and size
Measuring matter

Each property of matter can be measured using a special measuring tool

Tape Measure

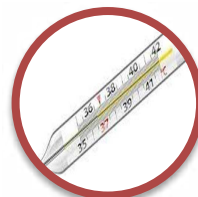
- *Used to measure length*

Ruler *Used to measure length*

Balance (Scale)

- *Used to measure* **Mass**

Measuring Cup

- *Used to measure* **Volume**

Thermometer *Used to measure* **Temperature**

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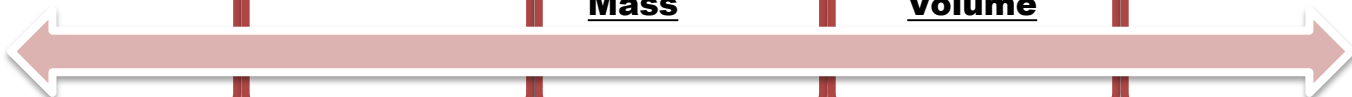
Lesson 2

Activity 4 The Case of the Kitchen Mystery

Sugar has large crystals

Salt hos small crystals

Flour has fine particles

A mixture of large crystals and very fine particles as in the unknown mixture Color, shape, odor, and texture are some of the physical properties of matter that help us describe matter

Lesson 3

Activity 6 Properties of Matter

Matter has many properties that you can describe.

- Some of these properties can be observed by our five senses.

Properties of Matter can be classified into.

Physical Properties	• *observed or measured without any change in the matter* • Examples • *1- Color 2- Shape 3- Odor* • *4-Texture 5 Mass 6-Volume* • *7- Temperature*
Properties Chemical	• *describe how matter interacts with other matter* • Examples • *1. The ability to burn: paper is lit on fire, it becomes ash.* • *2. The ability to rust. iron rusts*

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Volume and Mass

Volume

is the amount of space that matter takes up

Measuring units1-Litter (L) A big bottle of soda or juice might equal one liter

2-Milliliters (mL)3 -Cubic centimeters (cm³) (1L =1000 mL =1,000 cm³).

Examples

- A big bottle of water contains 1 liter or more.

Mass

is the amount of matter that object contains

Measuring units
1-Grams (g)A paperclip has a mass of about 1 gram
2-Kilograms (Kg)One liter of water has a mass of 1 kilogram (1 kg=1,000 g)

Examples

- A paperclip has a mass of about 1 gram

Note: *One liter of water a mass of 1 kilogram.*

Temperature :- *is a measure of how quickly the particles in a matter are moving.*

Temperature *can be measured using a* **thermometer**,

Quick-moving particles produce more heat energy than slow-moving particles.

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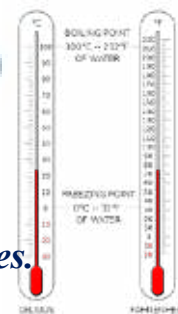
Activity 6 Measuring Properties

Experiment

in this activity, you will be working with a variety of materials and tools. Your will be measuring various physical characteristics of matter including mass, length and city by using different tools

Tools:

.Balance Bar magnets Water • Glass container • Stone Metric ruler • Iron nail . Cork • Wooden blocks

Steps:

[1] Approach the magnet to all the substances.
[2] Place all these substances in the glass container and observe which will float or sink?
[3] Use a balance to compare the masses of different substances.
[4] Record all the previous results in the following table.

Observations:

Property	Wooden Block	Iron Nail	Cork	Stone
Attracted to the Magnet or Not	Not attracted	attracted	Not attracted	Not attracted
2 -Sink or Float	Float	Sink	Float	Sink
3- Mass	80 gm	20 gm	40 gm	70 gm

Conclusion:

1. • Some substances are attracted to magnets and some other materials aren't attracted to magnets.
2. • Some substances float on water and some other sink in water

Does the change in the shape and size affect the object's mass?

1-The change in shape doesn't affect the mass
2- The change in size (volume) affects the mass

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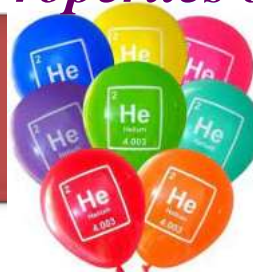
Lesson 4

Activity 11 Useful Properties of matter

Helium

Properties	Uses
Helium gas is lighter than air Helium is safe to use because 1- It is not poisonous (chemical property) 2- It is not flammable (chemical property	1- is used to fill balloons 2 -is used to fill blimps

Copper

Properties	Uses
Copper conducts electricity and heat (physical property) Copper can be stretched (Physical property	Copper is a metal that is used to make 1-Electrical wires 2-Cooking pots

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Activity 9 **Uses of Mother**

Uses of Matter

The knowledge of the properties of matter helps us to know the way to use it best

1-Cooking pots are made of metals

Because metals are good conductors of heat.

Heat Transfer

2- Handles of cooking pots are made of plastic or wood.

Because plastic or wood are bad conductors of heat.

3.Wood cannot be used to make electric wires

because wood is not easily stretched and does not conduct electricity well.

.

What happens if...

1-Handles of cooking pots are made of metals? ***Your hand will be hurt (burned) because metals are good conductors of heat.***

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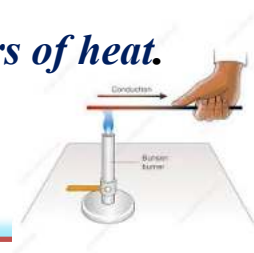
Conduction ***It is the ability of the substance to transfer heat and conduct electricity.***

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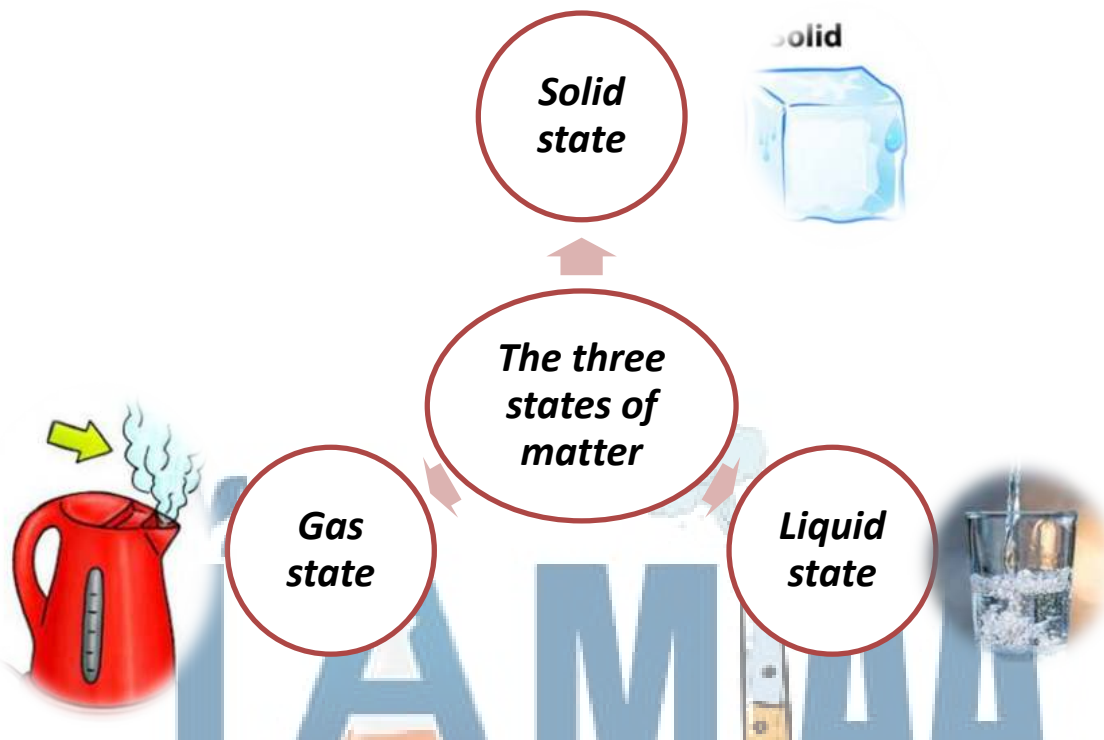
Concept (2.3)

Comparing change in Matter

Lesson 1 Melting Matter

Water is a matter that can be found in the three states of matter which are solid liquid and gas state

Put a bowl contains ice cubes in a hot place, you will find water in the bowl instead of ice cubes.
That means the ice melts and it is turned into water

Melting process in which a matter is changed from solid to liquid state when its temperature increases (by heating)

Solid matter should be kept below certain temperature to stay in solid state

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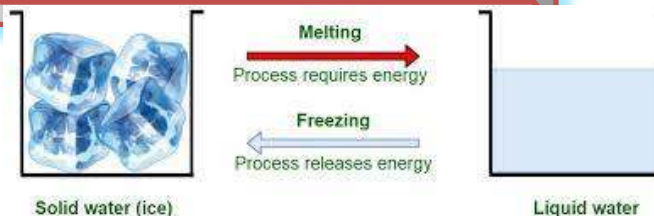
Changes in Matter

What Do You Already Know

Matter can be found in solid. liquid or gas state

The shape of solid matter	The shape of liquid matter	The shape of gases matter
They have a definite (fixed) shape.	They don't have definite shape.	They don't have definite shape.
Their shape don't change unless something is happening to change them.	They take the shape of their containers.	They completely fill their containers and take their shapes

Matter can be changed → *from one state to another without any change in its amount* → *so there is no change in the total number of particles of the matter during the change of the state of matter*

Activity 4 Particles

Thermal energy

Thermal energy is not a physical thing (material) but it is an energy in the form of heat

↓

We use thermal energy every day in many things such as cooking food and warming homes

↓

The thermal energy from the Sun keeps living things on the Earth alive

Thermal Energy Examples

Stove

Iron

Heater

Microwave oven

Toaster

Fireplace

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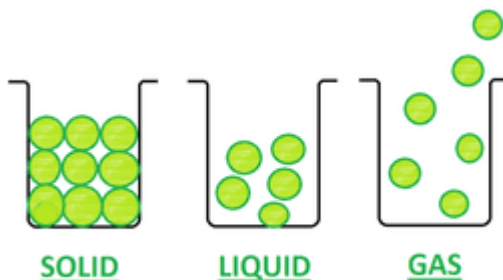
Any matter is made up of very small particles
Particles in motion
absorb more thermal energythey move, vibrateand spin around faster that causes this matter becomes warmer
Particles in matter are always in motion state
have energy that make them able to move, vibrate and spin around matter becomes warme
Notes
1
• When particles are cooled down, particles move slower and come close together
2
• hen particles are warmed, they move faster and spread out.
3
• Light energy is like thermal energy when particles of a matter absorb them, particles move, vibrate and spin faster
Matter
Consists of
very small particles
SOLID
LIQUID
GAS

Lesson2 temperature and state of matter

Activity (5) Changing States of Matter

★ *States of matter change by changing the temperature of the matter*

first By heating (increasing the temperature

the solid state changes into the liquid state

secondBy cooling (decreasing the temperature),

- the liquid state changes into the solid state

__Matter states__ are affected by thermal energy, as it can be changed from one state to another by gaining or losing energy.

Relationship between Temperature and State of Matter

It measures how much the particles inside the matter have energy

Energy of particles determines how particles move fast or slow) and Also the state of the matter

__Solid particles__ *have* __*less*__ *energy and move* __*slower such as*__ *Ice*

__Liquid particles__ *have* __*more*__ *energy and move* __*faster such as water*__

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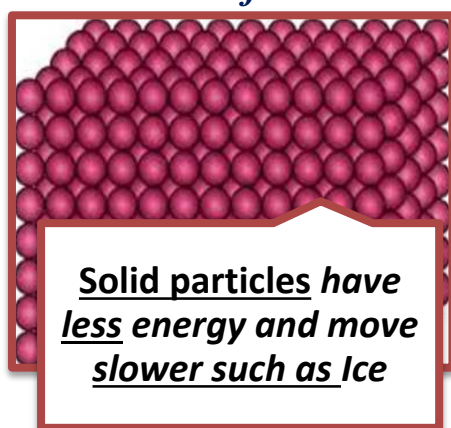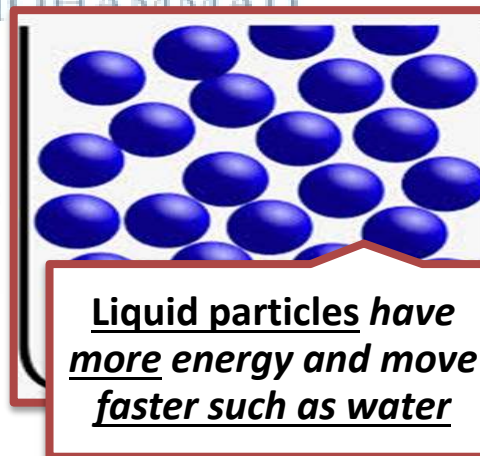
Water is a liquid between *0°C and 100°C*

The freezing point of water *is 0°C*

How does the water state change ?

Melting	Freezing
When the temperature of ice rises above 0°C	When the temperature of ice is cooled below 0°C,
Ice particles gain energy	Ice particles lose energy
Ice particles move faster	Ice particles move slower

Relationship between Temperature and the State of Matter

Physical changes do not change the makeup of a substance

Physical changes are reversible because water is still water (the same substance).

Physical Change *It is a change that happens to the matter without changing. Its structure (nature)*

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Activity 5 Changing States

We will study changing of states that happen in water as an example of changing of states of matter

Changing a solid to a liquid (Melting)

When placing a container of ice cubes on a hot stove

the ice gains thermal energy so, the particles move faster

and separate that causes the change of the ice from solid state to liquid state

Changing a liquid to a solid (Freezing)

When placing a water container in a freezer,

the thermal energy of liquid water is transferred to the space in the freezer so, the particles move slower

and get close together that causes the change of the water from liquid state to solid state (ice)

Changing a liquid to a gas (Evaporation)

When boiling a water container on a hot stove, the water gains thermal energy

so, the particles move faster and spread more that causes the change of the water from liquid state to water vapour

After the hot water vapor hits the cooler air, it condenses into tiny water droplets forming a small cloud (steam

Changing a gas to a liquid (Condensation)

When water vapor touches a cold lid, the thermal energy of the watervapor is transferred to the cold lid

so, the particles move slower and get close together

that causes the change of the water vapor from gas state to liquid state

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Lesson 3

Activity 6 Real-World Mixtures

Examples of mixtures

1-(solid matter) together ex :Some types of food (salads) or Sand and rocks

salt (solid matter) in water (liquid matter)mixture salty solution

gases mixed together such as nitrogen, oxygen, carbon dioxide.(Atmosphere)

Mixtures

Mixtures and Compounds

Mixture	Compounds
A mixture is a matter formed of two or more materials	A compound is a matter formed of two or more materials
The materials that form a mixture don't combine chemically and mixing them does not change them into new substance	The materials that form a compound combine chemically to form a completely new substance

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The components in many mixtures are difficult to be seen withou special equip such as mixture of gases

Properties of mixture

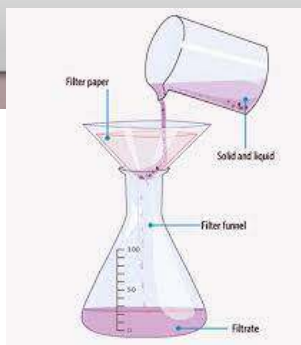
1. • All materials that form a mixture don't combine chemically.
2. • Each material in a mixture keeps its properties that you can use to identify
3. • The components of a mixture can be separated after mixing them

Separating mixture

There are many methods to separate the components of mixtures such

Filtration

A filter can be used to separate a mixture if one material in the mixture has smaller particles than the particles of other materials.

Example separation sand from Water and sand mixture

Evaporation

Evaporation can be used to separate materials that evaporate at different temperature

Example Separating the salt from a mixture of salty water by heating the salty water, the water will evaporate leaving the salt in the beaker

Separating Mixtures: Evaporation

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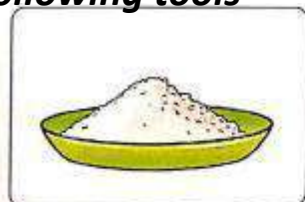
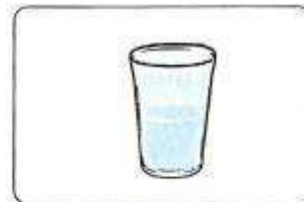
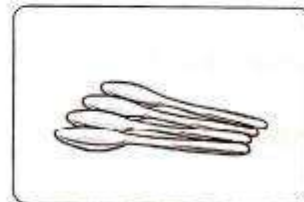
Activity 7 mixing it up with mass

Experiment 1

Using the following tools

Salt

Pepper

Water

Oil

Balance

Spoons

steps

1-Weigh 10 gm of salt and 10 gm of pepper with the balance

2-mix it together, the compare between the sum of their masses before and after mixing.

Observation

- The sum of their masses before and after mixing is equal.
- The properties of the substance doesn't change after mixing.

3-weigh 10gm of water and 10 gm of oil with the balance

4-Mix the water and oil then compare between their masse before and after

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Observation

The sum of their masses before and after mixing is equal .
The properties of the substances doesn't change .

5- Weigh 10gm of salt and 10 gm of water .

6-Mix them and weigh the masses and compare them before and after mixing.

Observation

- ***The sum of their masses before and after is equal.***
- ***The properties of the substances doesn't change.***

Conclusion

So: the masses of substances before and after are equal of these substances
After mixing and their properties don't change (forming mixture)

Experiment 2

USing the following tools

balance

corn starch

vinger

iodine

baking soda

:

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steps

1-weigh 10gm od vinegar and 10gm of baking soda

2-mix them together ,then weigh the mixture before and after mixing

Observation

- ❖ ***The sum of their masses before and after mixing is equal.***
- ❖ ***A gas is formed causing bubbles ,so the properties has changed after mixing.***

3-weigh 10gm of cornstarch and 10gm of iodine .

4-mix them together ,then weigh there masses before and after

Observation

- ❖ ***The sum of their masses before and after mixing is equal .***
- ▯ ***A compound formed and it's color is dark blue ,so the properties has changed after mixing.***

conclusion

So: the masses of substances before and after mixing is equal but the properties has changed (when forming compound

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Lesson (4)

Activity 8 Physical Changes In Our Lives

Physical change is a change in the shape of matter without any change in its structure.

Physical changes don't form (new substances) but they can change size, shape or state of matter

Examples of changes in our lives

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Activity 9 Chemical changes :

It is a change in the structure of matter producing a new matter

Examples of Chemical changes in our lives

1. ***Burning a paper forming ash.***

2. Making bread.

3-Iron rust when metals react with oxygen and water.

4. Mixing vinegar with baking soda.

5-digestion

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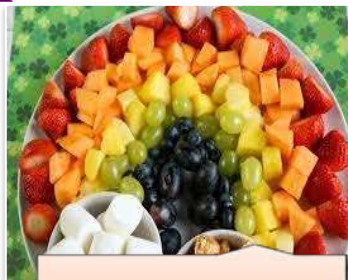
Activity 10 Changes of matter

Physical changes:

it is the change in the shape of the matter.

-Change in shape and size

-Cutting a paper

Cutting fruit

-Coiling a straight piece of wire to form a spring.

-The flow of sand in an hourglass changes theshape of sand in the container.

Expected change in color:

-Adding drops of food colors

Coloring a paper

Melting a butter or ice.

-Evaporation of water.

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Chemical changes:

It is the change in the structure of the matter producing a new matter

Examples:

Unexpected color

- change-When mixing iodine with cornstarch,a new substance is formed andits color is dark blue.

Formation of gas bubbles

- -When mixing baking soda with vinegar,
- gas bubbles appear.

-Formation of bad odor

- -Living a cup of milk out of the fridge
- for about two days can produce a bad
- smell (due to the chemical change happens

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Lesson 5

Activity 12 in action

Plenty of Water but non to drink

-Fresh water is about 70% of the surface of the earth which is covered by oceans.

-The water of the seas and oceans **is a mixture of water, salt , other minerals, gases, living organisms and dead organisms.**

Mixture:

is a matter formed of two or more materials that don't combine chemically

Desalination:

*It is the process of removing **salt** from water*

1-Filtration:
It removes any large materials such as seaweed, shells and fish.
‣Water, salts, minerals and gases would pass through filters that makes water still undrinkable

2- Evaporation:
When boiling the filtered water, water vapor rises up leaving salts and other minerals.

‣When cooling the water vapor, it is turned into liquid water and it is safe to drink it.

The remained water contain Avery big amount of of salt is pumped back to ocean after desallination

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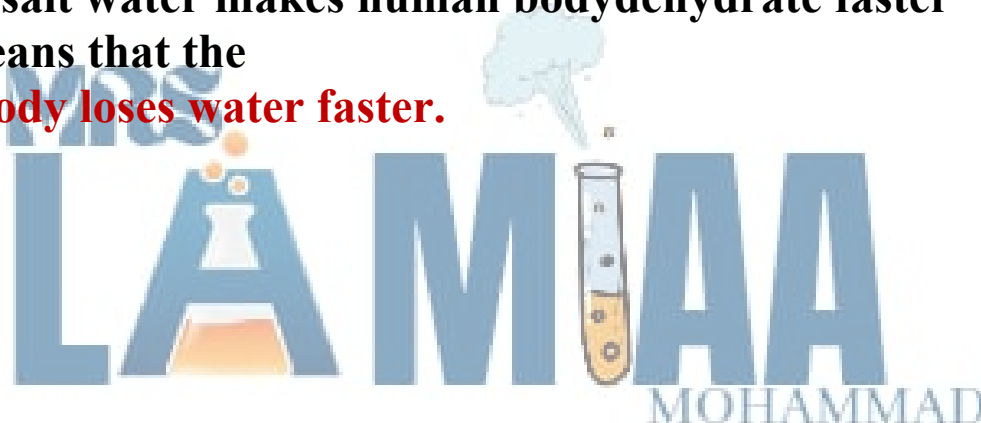
Filtration and evaporation are used to
Separate fresh drinkable water from the water of seas and oceans

Problems of desalination (disadvantages).

- ▶ **It needs a big amount of energy.**
- ▶ **It is very expensive process.**
- ▶ **Small marine organisms can be hurt, due to sucking of water into the desalination plants.**
- ▶ **It may cause many environmental problems.**

Note:
drinking salt water makes human bodydehydrate faster which means that the human body loses water faster.

With best wishes

∞ science & chemistry

Mrs. Lamiaa mohamed

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let's study
Science
&
CHEMISTRY
science &chemistry with mrs lamiaa
WITH MRS LAMIAA MOHAMED
_ important science words
for grade 5
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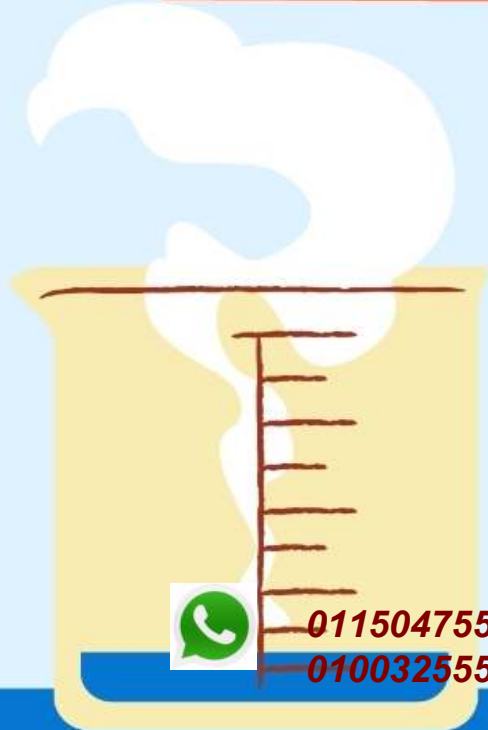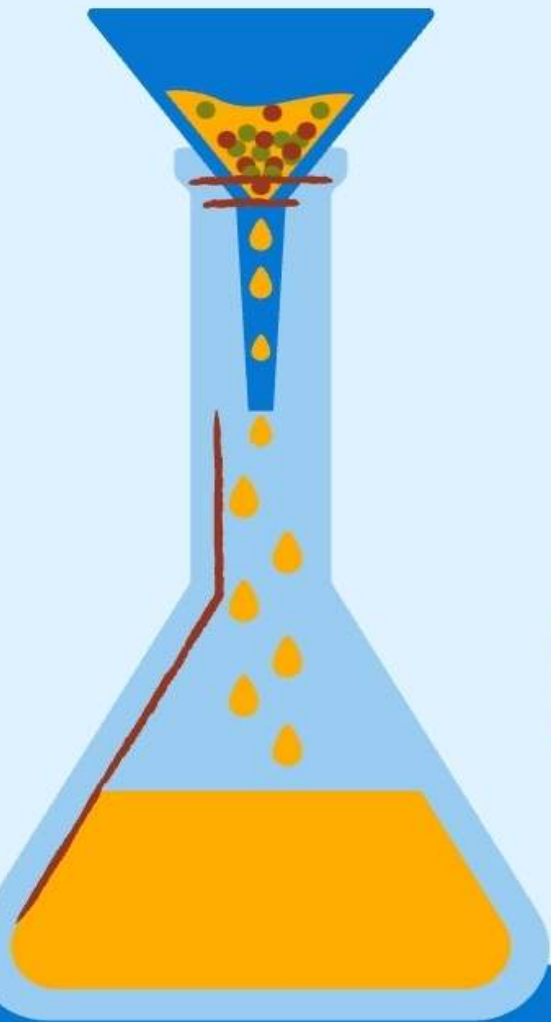
the word	the meaning
Plants need	تحتاج النباتات
Plant structure	تركيب النبات
stems	السيقان
roots	الجذور
flowers	الازهار
fruits	الثمار
leaves	الاوراق
natural resources	الموارد الطبيعية
Nutrient	عناصر غذائي
photosynthesis process	التمثيل الضوئي
Hydroponic system	نظام الزراعة المائية
minerals	المعادن
basic plant need	احتياج أساسي للنبات
combine	دمج
regularly	بانتظام

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word	meaning
xylem	نسيج الخشب
tubes	أنابيب
vessels	أوعية
stomata	لثغور
tiny openings	فتحات صغيرة
allow gases	تسمح للغازات
fix	تثبت
anchor	ترسيخ
absorb	تمتص
rood hairs	شعيرات الجذر
increase	تزيد
amount	كمية
transports	ينقل
Bowers of the plant	عوارض النبات
- supports	يدعم
Wood stem	ساق خشبية
Upright stem	ساق رأسية
Climb Stem	ساق متسلقة
Tubers	الدرنات
Runner	ساق جارية

word	meaning
chlorophyll	الكلوروفيل
captures	يلتقط
look like needles	يشبه الإبر
Flat	مسطحة
wider	واسعة
carbon dioxide	اللحاء
Phloem	ثاني أكسيد الكربون
manufacture	تصنيع
glucose	جلوكوز
circulating blood.	الدورة الدموية
Human circulatory system	جهاز الدورة الدموية البشرية
heart	القلب
blood vessels	الأوعية الدموية
body cells	خلايا الجسم
arteries	الشرايين
veins	الأوردة
fluids	السوائل
one direction	اتجاه واحد
Plant reproduction	تكاثر النبات
reproductive parts	الأجزاء التناسلية
seed dispersal	انتشار البذور
spines	أشواك
Maple Seed	بذر القيقب
Burdock	الأرقطيون
Dandelion Seed	بدرة الهندباء

the word	the meaning
Ecosystem	النظام البيئي
components	المكونات
The interaction	التفاعل
predators	الحيوانات المفترسة
decomposes	يتحلل
community	مجتمع
primary source	المصدر الأساسي
Producers	المنتج
Consumers	المستهلك
Decomposers	المحلل
Fungi	الفطريات
millipedes	الديدان الألفية
soil fertility	خصوبة التربة
Food Chain	السلسلة الغذائية:
linear feeding relationship	علاقة تغذية خطية

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the meaning

the word	the meaning
Prey	فريسة
Food web	الشبكة الغذائية
model	نموذج
Interconnected	المترابطة
disappears	اختفى
affected	تتأثر
bread mold	فطريات عفن الخبز
decomposition process	عملية التحلل
Scavengers	الكناسون
Vultures	النسور
Crabs	السرطانات
Cockroaches	الصراصير
Hyenas	الضباع
House flies	الذباب المنزلي
remains	بقايا
Snails	القواقع
Slugs	الرخويات
Fungi	الفطريات

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the word	the meaning
food wrapper	غلاف الطعام
landfill	مكب النفايات
Recycling	إعادة التدوير
Seed Dispersal	تفريق البذور
Climate changes	لتغيرات المناخية
Human activities	الأنشطة البشرية
marine	الموائل البحرية
Overfishing	الصيد الجائر
Palau island	جزيرة بالاو
coral reefs	الشعاب المرجانية
conserve	للحفاظ
improved	تحسين
harmed	يتضرر
destroyed	تدمير
marine food web	شبكة الغذاء البحرية
zooplankton	العوالق الحيوانية
algae	الطحالب
Habitats of living	بيئة الكائنات الحية
Food resources	لموارد الغذائية
ash	الرماد
population Changes	التغييرات السكانية

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the word	the meaning
mountain cliffs	المنحدرات الجبلية
nests	أعشاشهم
dive deep down	تغوص في أعماق البحر
microorganisms	الكائنات الحية الدقيقة
Seabirds	للطيور البحرية
Habitat loss	فقدان الموطن
Coral bleaching	ابيضاض الشعاب المرجانية
Impact	تأثير
Plastic Pollution	لتلوث البلاستيكي
UV rays	الأشعة فوق البنفسجية
plastic products	المنتجات البلاستيكية
abitat Restoration	استعادة الموطن
balanced ecosystem	نظام بيئي ومتوازن
Restoration projects	مشاريع الاستعادة
Rebuilding coral reefs	إعادة بناء الشعاب المرجانية
Nursery	المشتل

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the word	the meaning
Matter	المادة
mass	كتلة
volume	حجم
takes up space	تشغل مساحة
Solid state	الحالة الصلبة
Liquid state	الحالة السائلة
Gaseous state	الحالة الغازية
characteristic	صفة مميزة
Properties	خصائص
definite	محدد
no definite	غير محدد
container	وعاء
Particles of matter	جزيئات المادة
freely	بحرية
measuring tape	شريط قياس
length	طول
Scale	ميزان
states of Matter	حالة المادة
fixed	ثابت
Regular microscopes	الميكروسكوب المنتظمة
vibrate	يهتزون
more loosely	أكثر مرونة
germs	الجراثيم
models	النماذج
separated	فصلها
three-dimensional	ثلاثية الأبعاد
squeeze	تضغط

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the word	the meaning
model of globe	نموذج الكرة الأرضية
real thing.	لشيء حقيقي
similar	مشابهة
a real event	حدثًا حقيقيًا
The solar system	المجموعة الشمسية
planets	الكواكب
very tiny	صغيرة جدًا
germ	جرثومة
A model of a volcano	نموذج البركان
arrangement	الترتيب
regular pattern	بنمط منتظم
organized	منظم
Desert Home	بيت الصحراء
strong stones	حجارة قوية
protects	يحمي
Cold weather Home	منزل للطقس البارد
ceramic bricks	طوب السيراميك
inclined, slanted	مائل
Tropical Rainforest Home	منزل للغابات الاستوائية المطيرة
sticks	العصي
Tape Measure	شريط قياس
Ruler	مسطرة
Balance (Scale)	ميزان (مقياس)
Measuring Cup	كأس قياس
Thermometer	ترمومتر
texture	نسيج
physical properties	الخواص الفيزيائية
five senses	حواسنا الخمس

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the word	the meaning
Chemical Properties	الخواص الكيميائية
observed	ملاحظتها
interacts	تفاعل
iron rusts	صدأ الحديد
paperclip	دبوس ورق
amount	مقدار
ability	القدرة
physical characteristics	خصائصها الفيزيائية
magnet	مغناطيس
attracted	تنجذب
sink	تغرق
lighter	أخف
flammable	قابل للاشتعال
fill blimps	لملء المناطيد
Copper	النحاس
metal	معدن
Electrical wires	الأسلاك الكهربائية
Cooking pots	اواني الطبخ
conducts electricity	بتوصيل الكهرباء
Transparent	شفاف
Smooth	ناعم
Waterproof	ضد للماء
Screwdrivers	المفكات
Hammers	المطارق
Flexible	مرن
good conductors of heat	موصلات جيدة للحرارة
transfer	نقل

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the word	the meaning
Melting *process*	عملية الانصهار
Freezing	تجمد
reversible	قابلة للعكس
Evaporation	تبخير
Condensation	تكثيف
Mixtures	مخاليط
Salty water	محلول الملح
Atmosphere	الغلاف الجوي
Compounds	مركب
combine	تتحد
chemically	كيميائيًا
Separating mixtures	فصل المخاريط
Filtration	ترشح

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